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Ground-Water Data Management with STORET

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Ground-Water Data Management With STORET

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This manual has been designed to address both ground-water quality data and the related well site characteristics. For non-USGS wells, appropriate fields have been added to include this information on site characteristics. Much of this information has been adopted from the site characteristics information found in the USGS Ground-Water Site Inventory (GWSI). See Section 5.6 for additional information on this system.

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Ground-Water Data Management With STORET

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with Assistance from

Client Services Branch
Office of Solid Waste
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PREFACE

The Manual Methods for the Storage and Retrieval of RCRA-Ground-Water Monitoring Data on Storet Users Manual (March 1985) produced by the RCRA program served as the prototype for this current manual. The format has been changed and the scope expanded to make the manual more relavant to all ground-water programs.

This manual has been designed to address both ground-water quality data and the related well site characteristics. For non-USGS wells, appropriate fields have been added to include this information on site characteristics. Much of this information has been adopted from the site characteristics information found in the USGS Ground-Water Site Inventory (GWSI). See Section 5.6 for additional information on this system.

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1.0 INTRODUCTION AND PURPOSE

1.0 INTRODUCTION AND PURPOSE

This manual is for use by a wide variety of professionals interested in using EPA's water quality data base system, STORET, to manage their ground-water monitoring data. The purpose of this manual is to enhance the Ground-Water/STORET user's data management capabilities and to promote consistancy in the organization and accessibility of ground-water data stored in STORET. This manual was designed as a Supplement to the STORET USER's Handbook (February 1982) and it is suggested that you use that handbook in tandem with this manual. This manual describes those STORET storage, retrieval and analytical features central to ground-water data management. Additionally it explains methods for storing and retrieving a wide range of ground-water information pertaining to sites, samples and concentrations of analytes.

Comments and suggestions on how to improve this manual to better meet user needs are welcome and should be directed to Dr. Norbert Dee in the Office of Ground-Water Protection.

The manual is organized in the following manner:

- Section 1: Introduction
- Section 2: How to get started on STORET
- Section 3: The STORET system for ground-water monitoring data
- Section 4: Ground-water data storage formats
- Section 5: Ground-water data retrieval programs
- Appendices

1.1 Ground-Water Data Management at EPA

The Agency recognizes that data management activities are a significant component of ground-water monitoring. It is critical that environmental managers have access to reliable data on the quality, use, and environmental significance of ground-water resources for policy and programmatic purposes. Unfortunately until recently much existing ground-water data has been difficult to use, incompatable, of uncertain quality and lacking ancillary environmental information. The Agency staff is in the process of addressing these problems through a data requirements study and revisions to STORET.

EPA is now conducting a ground-water data management requirements study to identify the user community, their needs and the best hardware and software systems to achieve user's data management goals. The study will include an analysis of "STORET", the Agency's Water Quality Storage and Retrieval system. The requirements study will result in recommendations and an implementation plan in late 1986 or early 1987.

Meanwhile the Agency is taking a parallel track which is intended to provide good quality data as quickly as possible. This involves adding new codes and parameter keys to the existing STORET data storage system that will make it more useful to ground-water data managers. It should be emphasized that recommendations from the requirements study will build upon the changes being made to STORET and discussed in this manual.

1.1.1 Brief Background on STORET

STORET (Storage and Retrieval) is one of EPA's computerized data base systems for environmental monitoring data relating to the quality of water within the United States. There are over 9500 unique water quality parameters in STORET's Water Quality File and it contains over 90,000,000 observations on samples taken from more than 600,000 sampling stations. Of these Water Quality Monitoring stations in the Water Quality File, 270,000 are Ground-Water Monitoring stations located throughout much of the United States (see Exhibits 1-1 and 1-2). The USGS network of Ground-Water Quality Monitoring stations (WATSTORE) are also included in the STORET Water Quality file and comprise 160,000 of the total Ground-Water Monitoring stations in the system. The remaining 90,000 ground-water monitoring wells in which there is data stored, belong to the EPA, 46 States, 13 Federal Agencies and several interstate commissions. In addition, users may request access to the USGS computer file called the Ground-Water Site Inventory (GWSI) from the EPA, Office of Ground-Water Protection. This file contains a variety of information on over a million wells, springs and other sources of ground water. The system is described further in section 5.6 of this report. All of the ground-water monitoring stations are described with the station type code of well or spring. The data base spans a time period from 1899 to the present, however, the majority of the data in STORET has been collected since 1975. The STORET data base is updated once a week on Saturday with the users' transactions that have been submitted throughout that week. The USGS data is updated on a monthly basis.

Most of the data stored in STORET is water quality, but the system also has the capacity to store sediment, biological, and facility information. There are associated software programs which enable users to do a wide variety of graphical and statistical analyses on their data.

Exhibit 1-1

Locations of Ground-Water Monitoring Stations Contained in the STORET Water Quality File, Excluding the USGS Ground-Water Monitoring Stations, July 1985 (90,000 stations (wells))

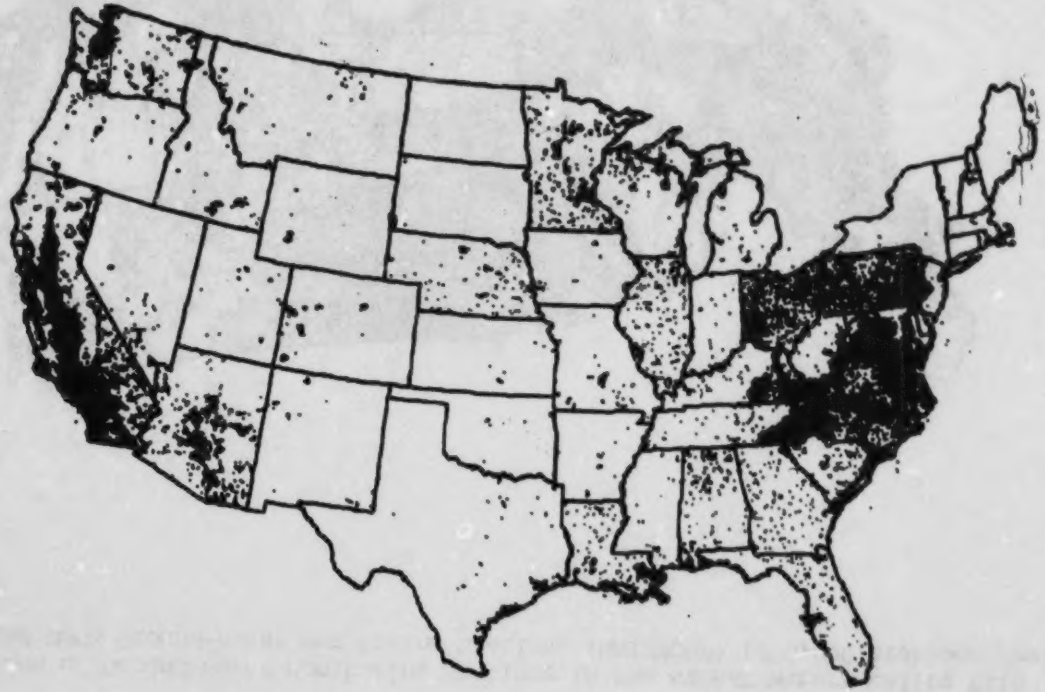
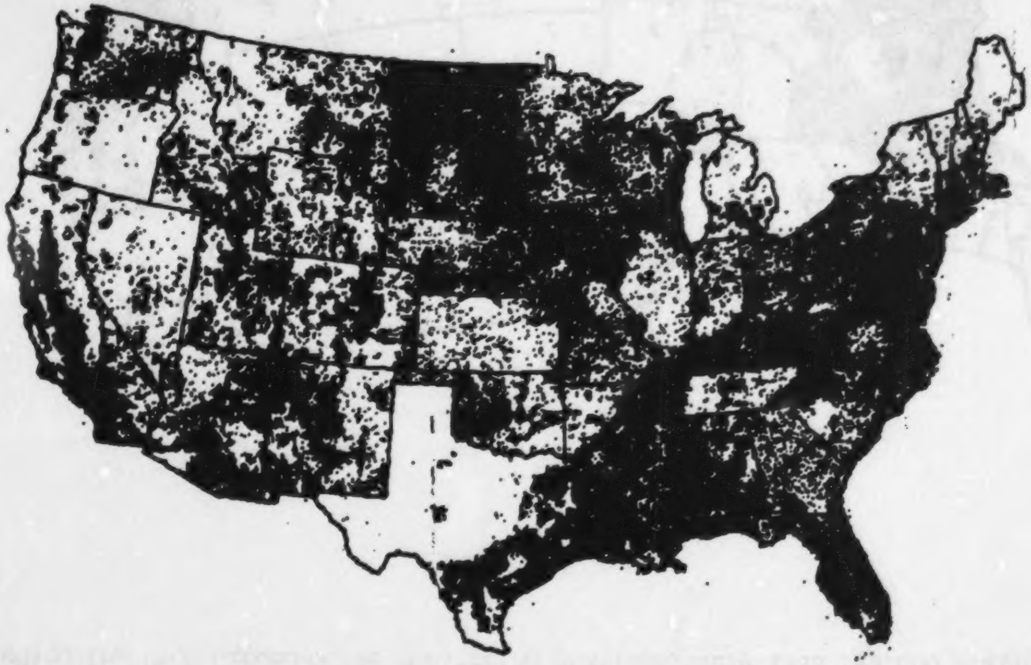


Exhibit 1-2

Locations of Ground-Water Monitoring Stations in the STORET Water Quality File
Including the USGS Ground-Water Monitoring Stations (WATSTORE) (270,000 stations (wells))



1.1.2 STORET Revisions Related to Ground Water Data Management

STORET was originally designed for the storage of surface water quality data. Because station data, sampling techniques, and some of the parameters collected during ground-water monitoring are different than for surface water, additional parameter codes, additional keys, and some changes to formats were needed to make STORET more accommodating to ground-water data storage.

During the past year the RCRA program initiated revisions to STORET to enable RCRA ground water monitoring data to be included in EPA's water quality and environmental data management system. One outcome of these changes was a manual Methods for the Storage and Retrieval of RCRA Ground-Water Monitoring Data on STORET - User's Manual issued in March 1985, and revised in October, 1985.

This manual is a revision of the RCRA STORET User's Manual published in March 1985. The original format has been expanded to include information pertinant to all programs collecting ground-water data. Also included are additional codes, information on a new format, an expanded discussion of special keys, and additional examples of retrievals.

1.2 Why Use STORET?

The Agency is recommending the use of the STORET system to manage ground-water monitoring data because:

- STORET is a well established system with a proven ability for storing and analyzing environmental monitoring data.
- STORET is widely available, with over 40 States as well as numerous Federal Agencies, research institutes, local governments, and interstate commissions having direct access to the system. Most users can obtain reports from small portable telecommunication terminals located in their offices.
- STORET is well known by many persons who would be entering ground-water data due to its widespread use in analyzing surface water data. Therefore any new costs would be related mainly to personnel and software not to hardware.
- STORET is versatile and has a wide diversity of functions available that will be useful for ground-water data interpretation.

- STORET has extensive analytical software to aid users in manipulating ground-water data statistically. Specifically use of STORET will enable you to:
  - -- Determine short and long term trends in ground water quality
  - -- Determine individual facility performance.
  - -- Generalize about hydrological settings, waste treatment, or disposal.
- STORET has additional software that enables users to present ground-water visually via graphics and maps.

° STORET routinely loads all data from the USGS WATSTORE data base onto the STORET data base. Thus, STORET provides easy acess to the USGS water quality data on one data base.

° STORET provides free training and operational aid from EPA's User Assistance Group.

1.3 Who Might Benefit From Use of This Manual?

° Programs requiring monitoring data for regulatory or analysis purposes such as:

- Office of Solid Waste (Resource Conservation and Recovery Act (RCRA))
- Office of Pesticide Programs
- Office of Emergency Response (Superfund)
- Office of Water
  - -- Non-point Source Program
  - -- Water Quality Planning and Standards
- Individual State programs dealing with hazardous waste management.
- State programs regulating industrial and domestic waste waters as well as solid wastes.
- Office of Drinking Water (Underground Injection Control Program)
- Office of Drinking Water (Public Water Supplies)

- States having ambient ground-water monitoring networks.
- Agencies responsible for RCRA, Safe Drinking Water Act (SDWA), and Clean Water Act (CWA) oversight such as Regional EPA Offices.
- Federal, State or local Planning Programs collecting ground-water data from special projects such as:
    - Rural clean water projects
    - National Pesticide Surveys
    - Area wide ground-water studies

2.0 HOW TO GET STARTED ON STORET

2.0 HOW TO GET STARTED ON STORET

In order for users to access the STORET System, they must perform the following steps:

- Obtain the required computer access codes from EPA
- Have equipment that is compatible with the computer on which STORET resides
- Make modifications to their account set-up which will improve their capabilities to use STORET (see Section 2.3)

They should:

- Receive training and/or documentation

Each of these steps is described in greater detail in the sections that follow.

2.1 Getting Computer Access Codes

In order to use STORET, users must first arrange access to the computer system on which STORET resides. To do this, the new user should first call STORET User Assistance (800-424-9067) and notify them of his/her intention to become a STORET user, and ask to be referred to the "STORET POINT of Contact" (POC) located in the appropriate EPA Regional Office.

Next, new users must contact the Point of Contact referred to them by STORET User Assistance to ascertain whether the intended user's organization is already using STORET and to develop a funding agreement for use of the system. The funds needed are simply the standard EPA timeshare account. Several funding mechanisms are available to new users:

- Other STORET users may exist in the new user's organization, and a simple expansion of the existing user's arrangement may be worked out.
- The EPA Regional Office may agree to share some of the expenses for using STORET with the new user.
- Use of STORET in support of any program is a grant-eligible item under 40 CFR Subparts 30 and 35.
- STORET access is available to private, noncontract firms through the National Technical Information System (NTIS). Users in this category will be billed for reimbursement of their use of the system.

Once a funding mechanism has been arranged between a new user and the STORET Point of Contact (POC), the new user will be given three access codes that will allow use of the computer system on which STORET resides. These codes include:

- A "User ID", a code identifying the user (often the user's initials)
- An account code, a code for the organization "paying the bill" for this use of STORET
- A password for system access security (the user may change the password as soon as the account becomes authorized, and will be asked to change it several times during the life of the account).

In addition, users will be queried, upon logging on to the computer, for a "FIMAS ID". The response to this prompt for STORET users should be "STORP".

When users are issued the computer access codes, they are also issued three important phone numbers. These phone numbers are:

- Client Services Branch (formerly the STORET User Assistance Team) in Washington D.C. (800-424-9067 or FTS/202-382-7220)

  The Client Services Branch provides STORET Users with a wide range of assistance including software, hardware, teleprocessing, and system advice. The Branch also responds to queries on application of the system to particular needs, such as the use of STORET with ground-water, effluent, and tissue data.

  The Branch provides user documentation on basic and advanced retrieval options, interfaces to other systems (such as the Statistical Analysis System (SAS)), interactive procedures, and file structure, which allows the user to write programs to access the data base. A description of pre-editing and storage features of the system is also included. STORET system training in the form of basic and advanced seminars is also provided by the Branch.

- Technical System Assistance in Research Triangle Park, North Carolina (800-334-2405 or FTS/629-7862). The National Computer Center (NCC) located in North Carolina has a comprehensive user support service, providing the user technical assistance, problem diagnosis and solution, as well as consultation with respect to all NCC methods, procedures, and software needed to access and effectively use the NCC ADP resources. The NCC User Support is the primary point of contact between the NCC user community and the NCC-IBM facility.

- Telecommunications Assistance in Research Triangle Park, North Carolina (800-334-0741) or FTS/629-4506).

  The NCC provides and maintains hardware and software components required to support the local NCC low-speed interactive and national remote batch network. Continuous monitoring of the network is provided, and when necessary, software modifications and hardware changes are made. Where possible, attempts are made to anticipate and prevent communication problems along the network. Users experiencing communication problems should contact Telecommunications for assistance. They will work directly with users to test lines and interface low- and high-speed terminals.

  Users should call Telecommunications Support as soon as they receive their computer access codes to get a specific phone number for accessing STORET. Although the computer on which STORET resides is located in North Carolina, local telephone numbers are available from Telecommunications Support for many areas. If a local number does not exist, an "800" number is provided so users should never need to make a long distance call.

2.2 Assuring Equipment Compatibility

To access STORET, users will need a modem/telephone set-up to communicate with the computer, and a remote terminal with which to interact with the STORET system. There are two hardware specifications for these equipment. These specifications are:

- The modem used for telecommunications must have a baud rate of either 120, 300 or 1200.
- The computer terminal to be used to operate STORET must be an ASCII teletype equivalent (most terminals are ASCII teletype equivalent).

Microcomputers, such as Lexitrons or IBM PC's may be used to access STORET if a modem and communications software are available. If new users do not know whether their available hardware meet the above criteria or if their software has the right specifications, they should ask the ADP contact within their organization or the STORET Point of Contact in the EPA Regional Office.

Upon getting access to the EPA computer in Research Triangle Park, North Carolina, users automatically have arrangements in place for their computer output to be printed there and mailed to them. This is a "default" set-up; i.e., these arrangements will be maintained unless the user makes others. Users may find it useful to have some sort of printer or printing terminal available to them, particularly when they run interactive programs or programs that yield a small (e.g., five pages or less) output. This may be accomplished by:

- Users operating STORET on a printing terminal
- Users having their own printers to which output can be routed
- Users making arrangements with their EPA Regional office for their output to be routed and printed there, and then forwarded to the user. This option varies from region to region depending on Regional resources. The option should not be utilized without the Region's concurrence.

If the user chooses not to make any of the above arrangements (or cannot), output can still be mailed to the user from North Carolina.

2.3 Set-Up Modifications for Accessing STORET

Once users have received access codes and have learned how to log-on to the computer, they must execute a few simple procedures to get started on STORET. These include:

- The "NEWUSER" command, which makes certain internal system arrangements for using STORET
- The "JOBPARM" command, which sets up a job card for users (the "card" that will almost always automatically accompany any program that the user runs, which identifies the user and any program specifications the users desires) with default values.

Specific instructions on how to execute these procedures are provided in the STORET training materials (see Section 2.5 below).

2.4 Training

All new STORET users should attend the introductory training class on system operation given by the STORET User Assistance Team, and should receive the documentation needed to operate STORET. Other types of training and documentation are available to the user, and new users may wish to obtain them once they feel proficient in STORET.

New users should contact the Regional STORET Points of Contact and ask to be included in the next available training class. The STORET User Assistance Team gives training classes many times during the year, and at various locations depending on the number of users needing training. Therefore, arrangements for training convenient to the user can be made.

2.5 Documentation

The following other documentation and manuals may be of help to Ground-Water/STORET users (the first is essential, and contains much information about STORET not duplicated here):

- The STORET Users Handbook (Volumes 1 and 2)

  The users manual for operation of the STORET System, explaining the details of how to operate the system for data storage and how to run retrieval programs, available from STORET User Assistance. Volume 2 of STORET USERS HANDBOOK (EPA 1982) pertaining to advanced retrievls is no longer available and has been replaced by the on-line data sets "STORET.HELP.SEMINAR.DOC.ADVANCED", "STORET.HELP.FILE.FORMATS", "STORET.HELP.PGM.MSP", and "STORET.HELP.PGM.LOC".

- NCC-IBM User's Guide

  The purpose of the NCC-IBM User's Guide is to provide a useful source of information about the EPA National Computer Center, its procedures, available resources, operations, and supported software. Much of the information in the Guide is about the IBM 3091, its uses, and its job control language is explained in greater detail in various IBM manuals. Extensive references to those manuals have been included, and the user may obtain their own manuals for their reference. Some utility programs have been written at NCC and are not generally available at other IBM installations. These are documented for the user in the NCC-IBM User's Guide and may also appear in other NCC-produce manuals. Of particular interest to ground-water/STORET users will be the NCC TSO Manual.

- STORET Seminar Documentation - Storage Formats and TSO Storage Procedures

  The STORET Seminar Documentation, which is distributed at STORET training seminars or can be obtained from the STORET User Assistance Team, contains all of the information required to utilize STORET. It presents the material in a succinct manner with many examples to aid the new user. Even though it does not cover each function as completely as the STORET User's Handbook, (1982) it cross references page numbers to the Handbook which gives a more complete explanation of each function.

- The Manager's Guide to STORET

  This document identifies applications of EPA's STORET system to aid the user in meeting the requirements of the Water Quality Management Program. The manual's perspective is that of a manager and no attempt is made to explain specific system language or syntax.

2.6 Contacts

There are several contacts available to Ground-Water/STORET users. A list of these contacts and the services they offer follow:

- Office of Information and Resource Management (OIRM)
  - Gives technical assistance in accessing and using the STORET system; provides STORET training; and distributes STORET users' manuals.
  - Coordinates use of STORET for Ground-water data with all EPA Program Offices and ADP activities such as the FINDS* or HWDMS** Systems.

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*/ Facility Index System

**/ Hazardous Waste Data Management System

Please contact the following people within OIRM's Program Systems Division for the ADP activities of interest:

STORET Administration, User Manuals and Training - Dan Parker 800/424-9067

CERCLA - Antonio Jover, FTS/382-2387

Pesticides - Antonio Jover, FTS/382-2387

Public Water Supplies - Chuck Tobin, FTS/382-2374

RCRA - Antonio Jover, FTS/382-2387

Toxics - Antonio Jover, FTS/382-2387

UIC - Chuck Tobin, FTS/382-2374

All other programs - Chuck Tobin, FTS/382-2374

- Office of Solid Waste/Land Disposal Branch
  - Programmatic support in organizing your RCRA data for STORET; documentation on coded parameter code values; focal point for the initiation of new parameter codes, analytical capabilities, or other needs. (Dr. Robert April, FTS/202-382-4654)
- Office of Ground-Water Protection
  - General information on EPA's Requirements Analysis and future development of STORET for ground-water data. (Dr. Norbert Dee, FTS/202-382-7077)
- EPA Regional Offices
  - Each office has one Point of Contact (POC) who is responsible for developing Regional STORET policy, coordinating training and user access, and allocating time sharing funds for Regional users. The Client Users Branch (Dan Parker 800/424-9067) will provide users with name and phone number of the appropriate POC.

3.0 THE STORET SYSTEM FOR GROUND-WATER MONITORING DATA

3.0 THE STORET SYSTEM FOR GROUND-WATER MONITORING DATA

This section presents a brief introduction to the STORET System, terminology used with the System, and explains the structure of the STORET data record as it pertains to ground-water data storage and retrieval. More detailed information about the STORET System operations and capabilities are given in the STORET Users' Handbook (February 1982).

3.1 Terminology for Ground-Water/STORET Users

There are numerous terms and major categories of data that Ground-Water Storage Users should be familiar with before entering their parametric data into STORET for storage. These terms are summarized below:

- A facility is an entity (such as an industrial or manufacturing plant) where ground water is being monitored.
- A waste area is that area within a facility where material is being disposed or treated, such as a lagoon or landfill, around which wells have been installed to monitor the ground water. This term is used mainly in the RCRA and Superfund programs.
- A station, when monitoring for ground water, is a single monitoring well or a spring from which samples are being taken.
- The period of record is the collective total of information from all sampling events for a single station.
- A sampling event is all the information collected at one date, depth and time from a well. Each sampling event will typically include measurements of many substances or parameters.
- A data element (or variable, or STORET "parameter") is that substance or other factor which is being measured.
- An observation (or data point, or value) is the value of a data element for a sampling event at a station (well) such as 3 ug/l, 20 ug/l, .5mg/l etc.

3.2 STORET as a Data Base

Ground-Water/STORET users will be inputting data into the Water Quality File. The data you will be inputting into this file will be either station data, which describes and categorizes the geographical location of where a sample has been taken; or parametric data, which describes the conditions under which a sample was taken (such as date, time, and depth) as well as the results of the sample analyses. Each data record for a ground-water monitoring station is composed of three parts:

- The station header
- The descriptive paragraph
- The parametric data field

Exhibit 3-1 following this page illustrates how the three parts of a STORET record, which are further described below, appears on a computer terminal or print out. This example illustrates the record of a RCRA facility.

EXHIBIT 3-1

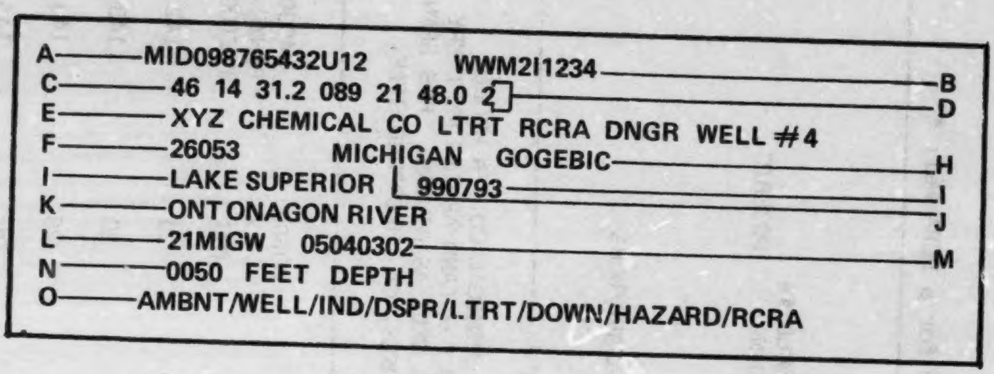
Example of Overall STORET Data Organization for a RCRA Well **

```
-----------------------------------------------STATION HEADER-----------------------------------------------

                      MID098765432U12      WWMI1234
                      46 14 31.2 089 21 48.0  2
                      XYZ CHEMICAL CO LTRT RCRA DNGR WELL #4
                      26053                          MICHIGAN      GOGEBIC
                      LAKE SUPERIOR   990793
                      ONTONAGON RIVER
                      21MIGW        050403021
                      0050  FEET DEPTH
                      AMBNT/WELL/IND/DSPR/LTRT/DOWN/HAZARD/RCRA

---------------------------------------------- DESCRIPTIVE PARAGRAPH -----------------------------------------------

               THIS IS A LAND TREATMENT FACILITY OWNED BY XYZ CHEMICAL CO., A WHOLLY
               OWNED SUBSIDIARY OF ACME PETROLEUM.  IT IS USED FOR LANDFARMING REFINERY
               WASTES.  HANDLES WASTES FROM ACME REFINERIES AS WELL AS OTHERS.  HAS BEEN
               USED TO DISPOSE REFINERY WASTES FOUND ON THE JONES, GA SUPERFUND SITE.

-------------------------------------------PARAMETRIC DATA FIELD-----------------------------------------------

                                          00011        00400        00680        34030
                                SMK OR    TEMP          pH           TOC        BENZENE
DATE          TIME    MEDIA     DEPTH     FAHN          SU          (MG/L)     TOT(UG/L)

73/09/11      0915    RCRAGW    2110      66.0          6.0          20          142
UMK FOR ABOVE SAMPLE ...... 04001100
73/09/11      0916    RCRAGW    2220      66.2          6.0          20          143
UMK FOR ABOVE SAMPLE ...... 04001100
75/10/21      1100    RCRAGW    0000      48.0          6.5          26          143
UMK FOR ABOVE SAMPLE ...... 04001100
76/06/30      0810    RCRAGW    0020      69.0          6.6          25          145
UMK FOR ABOVE SAMPLE ...... 04001100
76/07/27      1620    RCRAGW    0000      73.2          6.6          25          141
UMK FOR ABOVE SAMPLE ...... 04001100
```

**/ See Chapters 3 and 4 for explanation of record components.

3.2.1. Station Header

The station header of a STORET record describes the location at which samples were taken. Borrowing from Exhibit 3-1, the STORET station header looks like:



```
MID098765432U12        WWM2I1234
46 14 31.2 089 21 48.0 2
XYZ CHEMICAL CO LTRT RCRA DNGR WELL #4
26053      MICHIGAN   GOGEBIC
LAKE SUPERIOR  990793
ONTONAGON RIVER
21MIGW   05040302
0050 FEET DEPTH
AMBNT/WELL/IND/DSPR/LTRT/DOWN/HAZARD/RCRA
```

Key

A	Primary Station code
B	Secondary Station Code
C	Latitude/Longitude coordinates
D	Precision indicator (2 in this case). The precision code indicates the preciseness with which the Lat/Long has measured. If nothing is coded, A "4" is assumed.

Code	Precision
1	Tenth of a second
2	One second
3	Ten seconds
4	Thirty seconds
5	One minute
6	Ten minutes
7	Thirty minutes
8	One degree

Key (continued)

E	Station name
F	State/county code
G	State name
H	County name
I	Major basin name
J	Major/Minor/sub-basin code
K	Minor basin name
L	Agency code
M	USGS Hydrologic Unit Code
N	Station depth
O	Station type

All but station name and station depth are "key" data elements, meaning that they hold critical values by which data are selected or arranged in a data retrieval.

A station must be "established" (i.e., a station header must be created) before any other data for that station can be stored in STORET. One STORET station header will be used to describe each monitoring well. Technical instructions on how to create a station header for a monitoring well can be found in Chapter WQ-DE of the STORET User's Handbook (February, 1982), and programmatic instructions can be found in Section 4 of this report.

3.2.2 Descriptive Paragraph

The descriptive paragraph of a station is an optional field for entering textual information. A representative descriptive paragraph for a station at a RCRA-Facility appears on the following page.

Example of a Representative Descriptive Paragraph

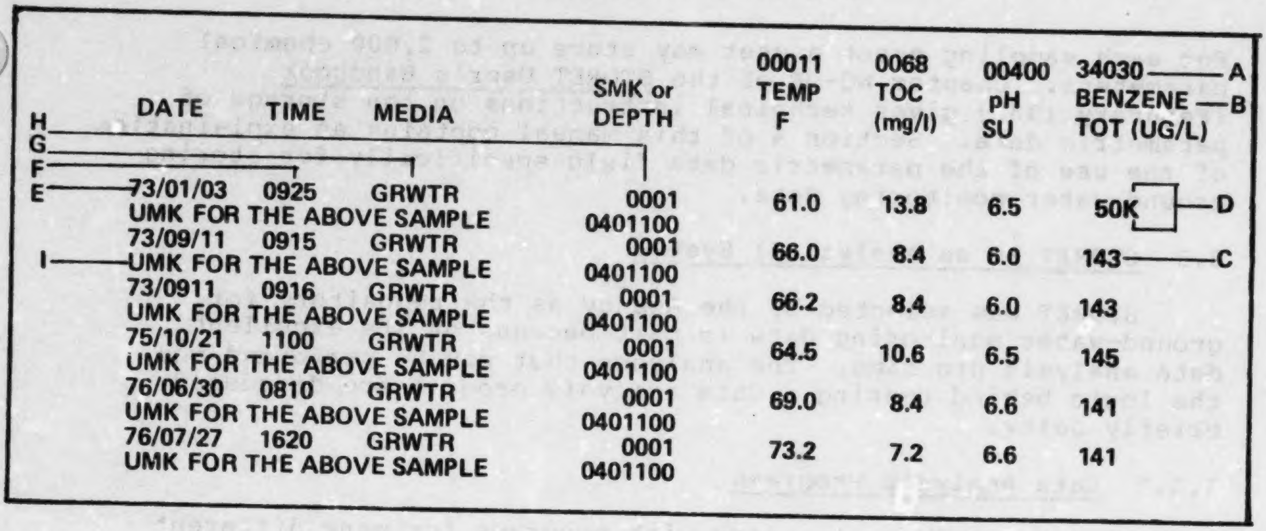
THIS IS A LAND TREATMENT FACILITY OWNED BY XYZ CHEMICAL CO., A WHOLLY OWNED SUBSIDIARY OF ACME PETEROLEUM. IT IS USED FOR LANDFARMING REFINERY WASTES. HANDLES WASTES FROM ACME REFINERIES AS WELL AS OTHER. HAS BEEN USED TO DISPOSE REFINERY WASTES FOUND ON JONES GA SUPERFND SITE.

Unlike the station header, which is composed of nine discrete data elements, the descriptive paragraph may contain any information describing the sampling station the user wishes to enter such as characteristics of the well, information on the monitoring agency or sampling process, etc. Any format, up to 1080 characters in length, can be used. The descriptive paragraph is an optional field, and data selection for retrieval is not based on its contents. Information which ground-water users might want to store in the descriptive paragraph may be found in Section 4.5.

3.2.3 Parametric Data Field

The parametric data field in a STORET record is where all the measurements are stored. As can be seen in Exhibit 3-1 and the example on page 3-7 the parametric data field is a matrix.

Example of Parametric Data Field



```
                                               00011    0068     00400   34030
                                    SMK or     TEMP     TOC      pH      BENZENE
DATE       TIME    MEDIA            DEPTH      F        (mg/l)   SU      TOT (UG/L)
73/01/03   0925    GRWTR             0001      61.0     13.8     6.5     50K
UMK FOR THE ABOVE SAMPLE          0401100
73/09/11   0915    GRWTR             0001
UMK FOR THE ABOVE SAMPLE          0401100      66.0     8.4      6.0     143
73/0911    0916    GRWTR             0001      66.2     8.4      6.0     143
UMK FOR THE ABOVE SAMPLE          0401100
75/10/21   1100    GRWTR             0001      64.5     10.6     6.5     145
UMK FOR THE ABOVE SAMPLE          0401100
76/06/30   0810    GRWTR             0001      69.0     8.4      6.6     141
UMK FOR THE ABOVE SAMPLE          0401100
76/07/27   1620    GRWTR             0001      73.2     7.2      6.6     141
UMK FOR THE ABOVE SAMPLE          0401100
```

Key

A	**Parameter Code**
B	**Parameter abbreviation and units**
C	**Parameter value**
D	**Remark code (K less = less than stated value)**
E	**Date sample - required information stored for each sample. If no date appears on the printout the date listed in the preceding line applies.**
F	**Time sampled - optional information which may be stored for each sample.**
G	**Media - indicates the media from which the sample was taken (GRWTR - Ground Water).**
H	**System Multi-purpose Key (SMK). Describes the way the sample was collected. (See section 4.5 for detailed explanation). If the SMK is not used this column may contain the item Depth of Sample. This is optional information which may be stored for each sample, ground-water users may want to store aquifier information here. Depth can be stored as a parameter code 82546, aquifer information is best stored with codes 84000 and 84001 (geologic age code and aquifer name).**
I	**Users Multi-purpose key (UMK). Describes the method by which the ground-water sample was collected and analyzed. (See section 4.5 for detailed explanation).**

For each sampling event a user may store up to 2,000 chemical parameters. Chapter WQ-DE of the STORET User's Handbook (Feburary 1982) gives technical instructions on the storage of parametric data. Section 4 of this manual contains an explainatio of the use of the parametric data field specifically for storing ground-water monitoring data.

3.3 STORET as an Analytical System

STORET was selected by the Agency as the repository for ground-water monitoring data in part because of its excellent data analysis programs. The analyses that may be performed and the logic behind running a data analysis program are discussed briefly below.

3.3.1 Data Analysis Programs

STORET provides its users with programs for many different types of analyses. These include:

- Non-analytical data displays, such as an "index", or listing of all the stations meeting user-specified criteria, or a station location map
- Tabular analyses, such as a statistical summary of data, or an analysis of the frequency of drinking water standard violations
- Graphic displays of trends, including the concentration of a substance over time
- Map displays of data, including the mapping of statistically summarized parametric data, the aggregation and analysis of data within user-specified geographic boundaries, and the mapping of trends in water quality indicator levels
- Interfaces with other important data analysis systems, such as the Statistical Analysis System ("SAS").

STORET analytical programs are described in the STORET Users' Handbook (February 1982) in Section WQ-RET.

3.3.2 STORET Retrieval Logic

It is important for Ground-Water/STORET users to keep STORET retrieval logic in mind when storing data. Understanding this logic will help ground-water data managers place key information in strategic locations where it may serve as data selection criteria for retrievals.

Stations within an area of interest can be selected by agency and station number, a latitude- and longitude-defined polygon, State code, County code, Section 208 water-quality management area or major, minor, subbasin code and USGS hydrologic unit code. The station retrieved using the above selectors can be combined with station restrictors to obtain only those stations that meet two or more criteria of interest.

Station retrieval may be restricted by State, State and county code, or by specifying a agency code, or excluding a agency code. Station retrieval in STORET may also be restricted to those stations that have a certain attribute, e.g., a particular station type code(s) or a particular parameter(s) by using a mask. The name of the mask is specified in the "EXTRACT" statement enabling retrieval of stations contingent on the presence or absence of data for a group of parameters. For example masks have been created for each group of priority toxic pollutants. The masks are named as follows:

PRIPOLIN - inorganic
PRIPOLOR - organic
PRIPOLME - metals
PRIPOLPE - pesticides

The STORET "C" function enables the user to designate in a single expression, an entire group of parameters. The following STORET statement will restrict station location to ground-water stations that have sampled for inorganic priority pollutants. By combining the STORET "C" function with the STORET EXTRACT Statement.

EXTRACT=C(PRIPOLIN and WELL),

Having selected the stations for retrieval in the area of interest, the user then must proceed to select the samples and parameters required. Samples are selected by date, time and depth or SMK. Frequently, a STORET user will be interested in only specific parameters which are obtained by specifying the numeric code of the paremeters of interest or by specifying the "C" function with the "P=" statement. For example, P=C(PRIPOLIN) will retrieve all the parameters within the inorganic priority toxic pollutant group. For additional information on using the STORET "C" function the user may refer to the STORET help data set " STORET.HELP.RETRIEVE.PARGROUP.

The logic behind running a STORET data retrieval ("also called an analysis program") reflects the structure of the data base as has been described previously. A "typical" data retrieval request appears on the following page.

Typical STORET Data Retrieval Request

```
B
A  PGM=INVENT,A=21MIGW,S=ALL,EXTRACT=WELL,            C
E     P=77004,P=77015,P=77885,P=78113,P=81551;        D
      BD=820101,ED=841231,
```

KEY

A Program to be run, "PGM INVENT" will print out a data inventory. In some retrieval programs a user may enter specifications for the output format

B Station selector - one of the criteria for the selection of the stations from which the user wants to see data. In this case the first broad "cut" through the data base was the Agency code "21MIGW" and all stations sampled by that Agency, as specified by "ALL"

C Station restrictor - Criteria that further narrows down the stations choosen by the selectors. In this case only those stations with the station type code of WELL were choosen (EXTRACT=WELL)

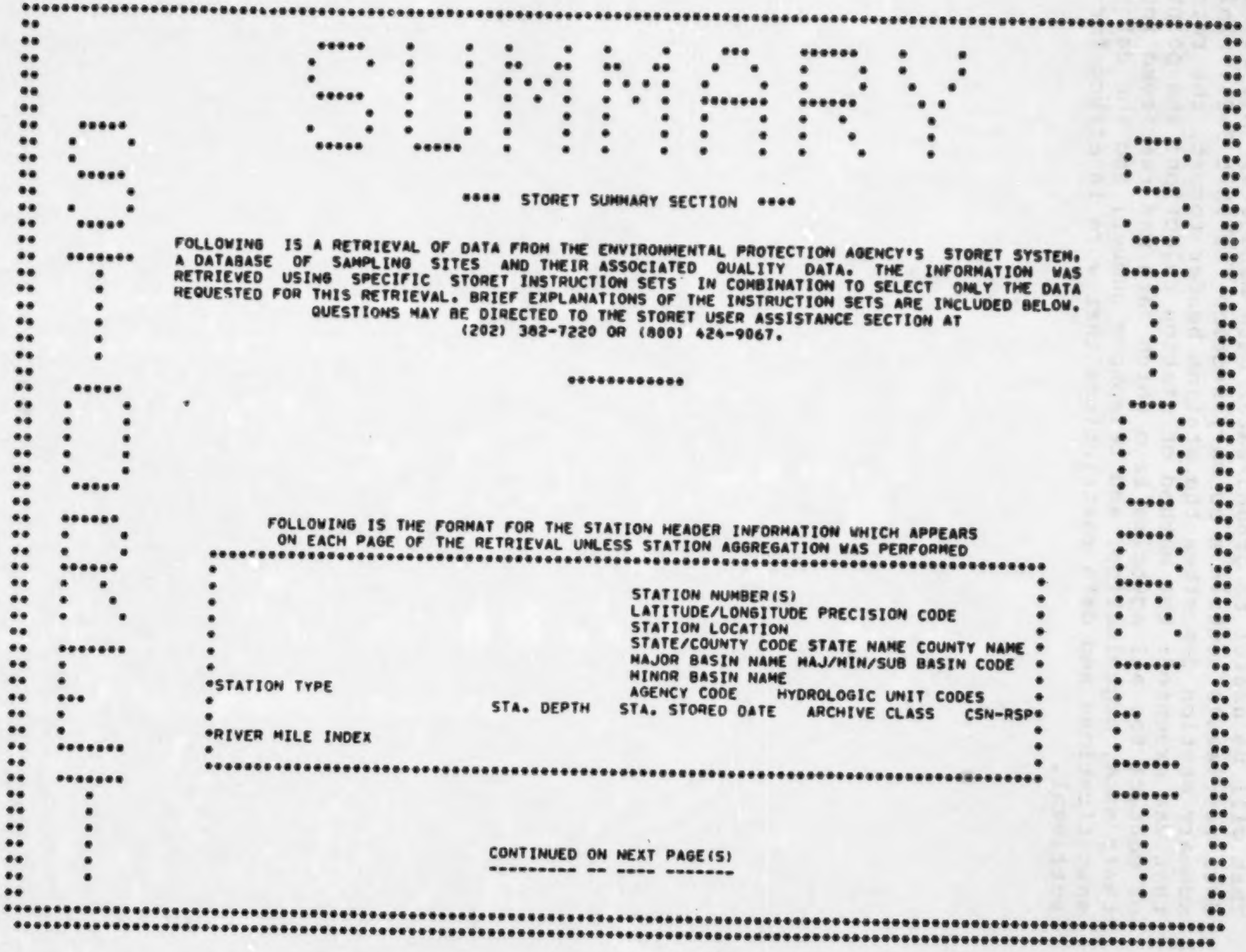
D Parameter Codes represent specific chemical data to be retrieved for analysis. Each specific chemical is identified by a five digit parameter code. In this case.
77004=Ethanol,TOT;77015=Isopropanol; 77885 Methanol, TOT; 78113=Ethyl Benzene TOT; 81551=Xylene, TOT

E Data restrictors - These enable users to apply restrictors to the data being retrieved. Data restrictors are almost always by date, time and/or depth. In this example data are restricted by the sampling date by using the key word combinations of "BD=820101,ED=841231," where "BD" stands for "beginning date" and "ending date" respectively. It should be noted that in STORET "date" refers to date the sample was collected not the date sample was analyzed. This has been a rather common error among STORET data coders.

Chapter 5 contains examples of various retrieval outputs that will be useful to ground-water data managers. All STORET data retrievals contain a summary section (Exhibit 3-2). This summary section describes the station header format, the retrieval that was executed; the method of station selection; the point of contact for all agencies from which data was retrieved including their name, organization, and telephone number; and the data specifications and data restrictions that were in effect for the retrieval.

Exhibit 3-2

Example of a STORET Data Retrieval Summary Section



```
                         SUMMARY

              ****  STORET SUMMARY SECTION  ****

FOLLOWING  IS A RETRIEVAL OF DATA FROM THE ENVIRONMENTAL PROTECTION AGENCY'S  STORET SYSTEM,
A DATABASE  OF  SAMPLING  SITES  AND THEIR ASSOCIATED  QUALITY  DATA.  THE  INFORMATION  WAS
RETRIEVED  USING  SPECIFIC  STORET INSTRUCTION SETS  IN COMBINATION TO SELECT  ONLY THE DATA
REQUESTED FOR THIS RETRIEVAL. BRIEF EXPLANATIONS OF THE INSTRUCTION SETS ARE INCLUDED BELOW.
             QUESTIONS MAY BE DIRECTED TO THE STORET USER ASSISTANCE SECTION AT
                           (202) 382-7220 OR (800) 424-9067.

                                    ************

       FOLLOWING IS THE FORMAT FOR THE STATION HEADER INFORMATION WHICH APPEARS
        ON EACH PAGE OF THE RETRIEVAL UNLESS STATION AGGREGATION WAS PERFORMED
    *************************************************************************
    *                                     STATION NUMBER(S)                   *
    *                                     LATITUDE/LONGITUDE PRECISION CODE   *
    *                                     STATION LOCATION                    *
    *                                     STATE/COUNTY CODE STATE NAME COUNTY NAME *
    *                                     MAJOR BASIN NAME MAJ/MIN/SUB BASIN CODE *
    *                                     MINOR BASIN NAME                    *
    *STATION TYPE                         AGENCY CODE    HYDROLOGIC UNIT CODES *
    *                          STA. DEPTH   STA. STORED DATE   ARCHIVE CLASS   CSN-RSP*
    *RIVER MILE INDEX                                                         *
    *                                                                         *
    *************************************************************************

                          CONTINUED ON NEXT PAGE(S)
                          --------- -- ---- -------
```

Exhibit 3-2 continued

```
PGM=RET
   THIS IS A TABULAR LISTING OF ACTUAL SAMPLE VALUES FOR SELECTED PARAMETERS

A BEGINNING DATE OF (YY/MM/DD) 81/12/01 WAS RFQUESTED
AN ENDING DATE OF (YY/MM/DD) 81/12/31 WAS REQUESTED

STATION SELECTION WAS BY:

   AGENCY CODE(S) AND STATION NUMBER(S) FOR THE FOLLOWING AGENCY(S):
      11COELMN

CONTACTS FOR AGENCY CODES RETRIEVED:

    AGENCY       PRIMARY CONTACT NAME           ORGANIZATION                 PHONE NUMBER(S)
   --------    -------------------------    -------------------------    ------------------------------
   11COELMN    THIBODEAUX, BURNELL          CORPS OF ENGINEERS           (504)838-2445

DATA SPECIFICATIONS:

   REQUESTED PARAMETERS:
         PARAMETER CODES AND ABBREVIATIONS
      00940   CHLORIDE TOTAL     MG/L

   **NOTE**
      NO REMARK CODE RESTRICTIONS WERE SPECIFIED - COMPUTATIONS WILL
      BE PERFORMED WITHOUT REGARD TO DATA REMARKS

DATA RESTRICTIONS:

   **NOTE**
      NO DEPTH INDICATOR RESTRICTIONS WERE SPECIFIED - COMPUTATIONS WILL
      BE PERFORMED WITHOUT REGARD TO DEPTH INDICATORS

   **NOTE**
      NO GRAB/COMPOSITE RESTRICTIONS WERE SPECIFIED, SO BOTH GRAB AND COMPOSITE SAMPLE TYPES MAY HAVE
      BEEN INCLUDED - COMPUTATIONS WILL BE PERFORMED WITHOUT REGARD TO SAMPLE TYPE

   **NOTE**
      NO COMPOSITE SAMPLE RESTRICTIONS WERE SPECIFIED - COMPUTATIONS WILL INCLUDE STATISTICAL FEATURES OF
      THE COMPOSITING PROCESS, PRODUCING VALID RESULTS ONLY WHEN SOPHISTICATED COMPOSITES ARE NOT ENCOUNTERED.
      SPECIFY COMPOSITE HANDLING KEYWORDS "ANC" AND/OR "DSROC" IF NEEDED


                               ***** END OF SUMMARY SECTION *****
```

4.0 GROUND-WATER DATA STORAGE FORMATS

4.0 GROUND-WATER DATA STORAGE FORMATS

This chapter contains an introduction to the formatting and retrieval strategies used in STORET. An explanation of data needed for storage is presented in the next several sections.

4.1 Data Needs Identified for Ground-Water/STORET Users

A station must be thoroughly and correctly described so that data asociated with it can be stored and later retrieved. It should be emphasized that the more information available about a station the more flexibility there will be in retrieving the data stored with that station.

Three broad categories of descriptors have been identified as needed by Ground-Water/STORET users to completely document information available for a particular station. These categories are:

- Station descriptors
- Sample descriptors
- Analytical findings.

There are several elements under each category which will enable the user to describe the station thoroughly. These elements are perhaps more information than would be needed to store surface water data. Elements making up each category of descriptors are described below. A graphic representation of where these descriptors should be entered into the data record are given in Appendix A.

4.1.1 Station Descriptors

Factors which are descriptive of the sampling location and would not change over time are called "station descriptors". There are three types of station descriptors needed by ground-water data managers to support their ground-water monitoring data. They are as follows:

Facility descriptors --

descriptors of the operation being monitored, such as type of waste management area (e.g., landfill), facility location (not the corporate headquarters), (e.g., zip code) and type of business (e.g., disposer of hazardous waste). Facility descriptors, except ownership, will always be stored in either a station header or a descriptive paragraph.

Physical setting descriptors --

descriptors of the setting in which the facility is located and from which samples were taken, such as aquifer name or geologic formation name. For the most part these descriptors are stored in the parametric data field. Two of these descriptors are stored in the descriptive paragraph and one descriptor in the station header.

Well descriptors --

descriptors of those characteristics of a well which may be an important factor in data analysis and which would not be expected to change over time, such as type of well, well depth, and casing material. All but one of these descriptors will be stored in the parametric data "fixed date" field. Note that the term "fixed date" under the parameter field means elements that will not change with time.

4.1.2 Sample Descriptors

Factors that describe a sample at the time it was taken and which are expected to change with each sampling event are called "sample descriptors". Three types of sample descriptors needed by ground-water data managers to support their ground-water monitoring data are:

Sampling purpose descriptors --

descriptors of why and by whom a sample was taken. These descriptors are stored in the parametric "variable date field."

Sampling condition descriptors --

descriptors of the conditions during the sampling event, such as the depth to the top of the water table or the temperature. These descriptors are stored in the parametric "variable date field."

Sampling/Analysis Descriptors --

descriptors to document how a sample was taken and/or analyzed, such as how the sample was drawn and whether or not it was replicated.

4.1.3 Analytical Findings

The findings that were determined from each sample at a station are called "analytical findings". (e.g., the concentration of arsenic in the sample). Analytical findings will be stored in the STORET parametric data field by using "parameter codes". A printed list of all current STORET parameters and their codes may be obtained by users of the STORET system with the command %Batch with one of the following: PARMALFA, PARNUMER, and PARCAS. Descriptions of these lists are contained in Section 4.6.5 of this report and instructions on storing findings can be found in Chapter WQ-DE of the STORET User's Handbook (February 1982). A list of the parametric codes especially pertinent to RCRA and likely useful to others can be found in Appendices G and H of this manual.

4.2 Data Formatting

There are specific formats that must be used when inputting station and parametric data into STORET. Station header data is always stored and modified with the ?01 format which is a fixed form method. Exhibit 4-1 is the EPA form used for storing station location data in the STORET Water Quality File. Parametric data can be stored with 5 different formats: ?00, ?01, ?02, ?03 and ?04. Whereas any of these formats are acceptable the ?00 format is the most versatile and contains special features to be discussed in a later section that make it the only recommended format for ground-water users.

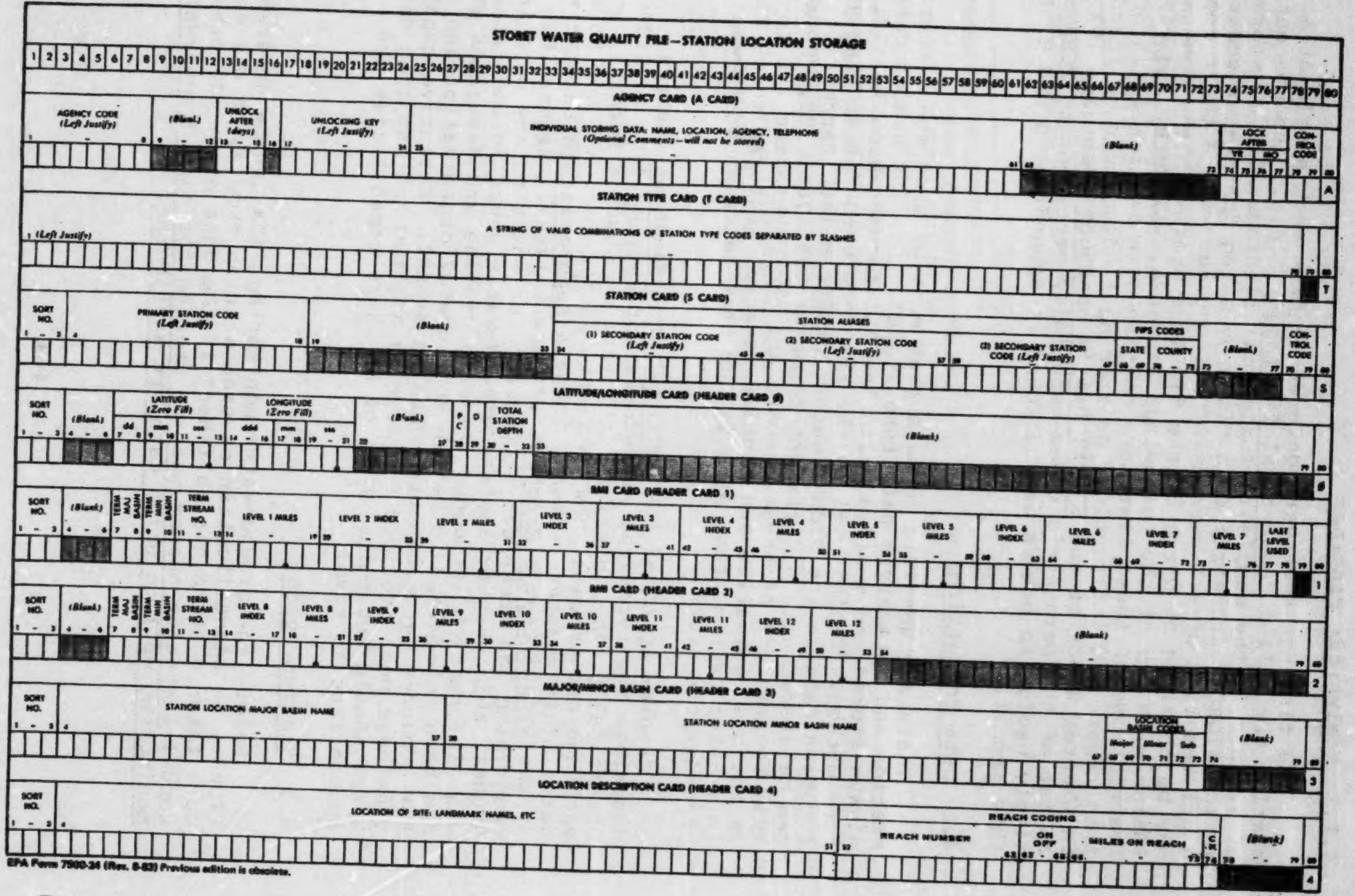
Chapter WQ-DE of the STORET Users' Handbook (February 1982) describes the technical procedures for storing data in STORET. Specifically, it describes the various storage formats, how each one can be used, how to invoke each format and how to enter data. This chapter is meant to be a supplement to chapter WQ-DE of the STORET User's Handbook (Feburary 1982). Rather than describing the technical procedures for entering any data into STORET, this chapter assists ground-water users in understanding what information is needed for data storage and describes what has been determined to be the most useful organization and format for ground-water monitoring data in STORET. Extensive capabilities have been provided for storing station and sampling data. Users should determine which of of these capabilities are appropriate to them.

4.3 Station Header

Before any ground-water monitoring data can be entered in STORET, an identification of each station from which the samples were taken must be "established" in the data base. In other words, a station header must be created for each ground-water monitoring well to which data are attributed.

4-1

Example of a Station Location Storage Form



STORET WATER QUALITY FILE—STATION LOCATION STORAGE

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

AGENCY CARD (A CARD)

AGENCY CODE (*Left Justify*) 1 – 8
(*Blank*) 9 – 12
UNLOCK AFTER (*days*) 13 – 15
16
UNLOCKING KEY (*Left Justify*) 17 – 24
INDIVIDUAL STORING DATA: NAME, LOCATION, AGENCY, TELEPHONE (*Optional Comments—will not be stored*) 25 – 61
(*Blank*) 62 – 73
LOCK AFTER: YR 74 75, MO 76 77
CONTROL CODE 78 79
80 A

STATION TYPE CARD (T CARD)

1 (*Left Justify*) A STRING OF VALID COMBINATIONS OF STATION TYPE CODES SEPARATED BY SLASHES – 78
79
80 T

STATION CARD (S CARD)

SORT NO. 1 – 3
PRIMARY STATION CODE (*Left Justify*) 4 – 18
(*Blank*) 19 – 33
STATION ALIASES:
(1) SECONDARY STATION CODE (*Left Justify*) 34 – 45
(2) SECONDARY STATION CODE (*Left Justify*) 46 – 57
(3) SECONDARY STATION CODE (*Left Justify*) 58 – 67
FIPS CODES: STATE 68 69, COUNTY 70 – 72
(*Blank*) 73 – 77
CONTROL CODE 78 79
80 S

LATITUDE/LONGITUDE CARD (HEADER CARD 0)

SORT NO. 1 – 3
(*Blank*) 4 – 6
LATITUDE (*Zero Fill*): dd 7 8, mm 9 10, sss 11 – 13
LONGITUDE (*Zero Fill*): ddd 14 – 16, mm 17 18, sss 19 – 21
(*Blank*) 22 – 27
P C 28
D 29
TOTAL STATION DEPTH 30 – 33
(*Blank*) 33 – 79
80 0

RMI CARD (HEADER CARD 1)

SORT NO. 1 – 3
(*Blank*) 4 – 6
TERM MAJ BASIN 7 8
TERM MIN BASIN 9 10
TERM STREAM NO. 11 – 13
LEVEL 1 MILES 14 – 19
LEVEL 2 INDEX 20 – 25
LEVEL 2 MILES 26 – 31
LEVEL 3 INDEX 32 – 36
LEVEL 3 MILES 37 – 41
LEVEL 4 INDEX 42 – 45
LEVEL 4 MILES 46 – 50
LEVEL 5 INDEX 51 – 54
LEVEL 5 MILES 55 – 59
LEVEL 6 INDEX 60 – 63
LEVEL 6 MILES 64 – 68
LEVEL 7 INDEX 69 – 72
LEVEL 7 MILES 73 – 76
LAST LEVEL USED 77 78
79
80 1

RMI CARD (HEADER CARD 2)

SORT NO. 1 – 3
(*Blank*) 4 – 6
TERM MAJ BASIN 7 8
TERM MIN BASIN 9 10
TERM STREAM NO. 11 – 13
LEVEL 8 INDEX 14 – 17
LEVEL 8 MILES 18 – 21
LEVEL 9 INDEX 22 – 25
LEVEL 9 MILES 26 – 29
LEVEL 10 INDEX 30 – 33
LEVEL 10 MILES 34 – 37
LEVEL 11 INDEX 38 – 41
LEVEL 11 MILES 42 – 45
LEVEL 12 INDEX 46 – 49
LEVEL 12 MILES 50 – 53
(*Blank*) 54 – 79
80 2

MAJOR/MINOR BASIN CARD (HEADER CARD 3)

SORT NO. 1 – 3
STATION LOCATION MAJOR BASIN NAME 4 – 37
STATION LOCATION MINOR BASIN NAME 38 – 67
LOCATION BASIN CODES: Major 68 69, Minor 70 71, Sub 72 73
(*Blank*) 74 – 79
80 3

LOCATION DESCRIPTION CARD (HEADER CARD 4)

SORT NO. 1 – 3
LOCATION OF SITE: LANDMARK NAMES, ETC 4 – 51
REACH CODING: REACH NUMBER 52 – 65; ON OFF 67 – 68; MILES ON REACH 66 – 73; C R 74
(*Blank*) 75 – 79
80 4

EPA Form 7500-34 (Rev. 8-83) Previous edition is obsolete.

PAGE 1 OF 2

4-4

Exhibit 4-1 (continued)

DESCRIPTIVE PARAGRAPH CARDS (HEADER CARD 5)

SORT NO. 1 – 3	(Blank) 4 – 6	DESCRIPTION (7–78)	79	80
			0	S
			1	S
			2	S
			3	S
			4	S
			5	S
			6	S
			7	S
			8	S
			9	S
			J	S
			K	S
			L	S
			M	S
			N	S

EPA Form 7500-24 (Rev. 8-83) Previous edition is obsolete.

PAGE 2 OF 2

Data in the station header remains relatively fixed for the life of the station. Although data in the station header may be changed, they are not normally added to or changed once established.

Exhibit 4-1 is an example of the EPA form used to input data for storing station header information in the STORET system.

The information contained on a station header is listed below. The items which are required by the system are starred.

- Agency Code* - identification code for contributor of the data to STORET; this is not the users ID.
- Station Codes*
  - Primary*
  - Secondary
- Station Name*
- Station Location Description*
  - Latitude/longitude coordinates*
  - State and county codes*
  - Major/Minor/Sub Basin Codes*
  - USGS Hydrologic Unit Code*
- Station Type Code

The recommended organization of these items for ground-water data is detailed in the sections that follow.

4.3.1 Agency Code

An Agency Code must be established before any station or sampling information can be entered into STORET.

The agency code in the STORET station header is that element which identifies the "coordinator" of the data. All STORET monitoring station must have an agency code. For ground-water monitoring data, the agency code represents the organization or regulator who is contributing the ground-water data to STORET and not each facility contributing data to the organization or regulator. An organization coordinating data being put into STORET may have one or more agency codes, but each station in STORET may have only one code.

Ground-Water users should store ground-water monitoring data under an agency code that is unique to other agency codes the users' organization may have. This will allow you to segregate and streamline your data base from existing files containing surface water quality data. Users may identify other agency codes that may exist for their organization in several ways:

- By contacting the ADP specialist or the EPA liason in that organization
- By contacting the ADP Coordinator and/or STORET coordinator in the EPA Regional Office
- By contacting STORET User Assistance
- By using a STORET command procedure called "%contacts".

There are four recommended components to an agency code for ground-water monitoring data. In general, the eight-digit STORET agency code for ground-water monitoring data should be composed of:

- A STORET-understood indication in the first two characters of who that agency code represents, which include:
    - "11" for an EPA Regional office or other Federal agency
    - "21" for a State agency.
- A two-letter abbreviation or number representing the agency as the third and fourth characters, which may be either:
    - The Federal Information Processing System two-letter abbreviation for the State (the standard abbreviation, which can be found in Appendix C of the STORET Users' Handbook)
    - "HQ" for EPA Headquarters program offices

      The two-digit number of the EPA Region, such as "01" for Region I or "08" for Region VIII.

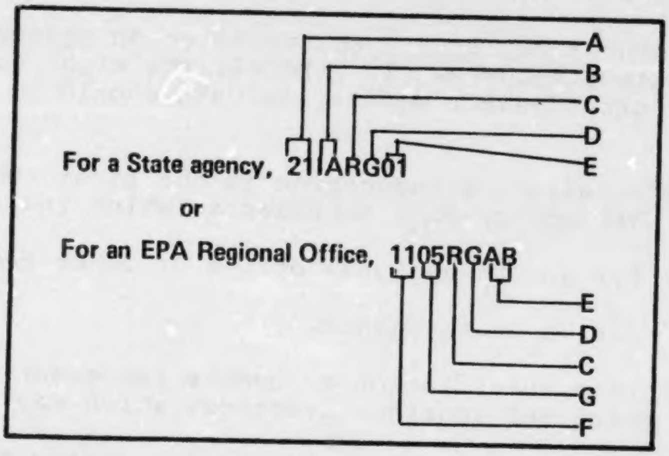
- An alphabetic character to indicate which program the data is collected from as the fifth character. For instance an "R" to indicate that the data is collected under the RCRA program. We recommend the following codes:

  R for RCRA
  C for CERCLA
  U for Underground Injection Control
  S for Public Water Supply
  P for Pesticide data
  A for ambient ground-water monitoring network

- "G" to indicate that the data is ground-water monitoring data as the sixth character

- Two optional "free" characters for the user to code as needed for the seventh and eighth characters.

Examples of STORET agency codes for RCRA ground-water monitoring data are shown below:


A
B
C
D
E
For a State agency, 21ARG01
or
For an EPA Regional Office, 1105RGAB
E
D
C
G
F

Key

A	Indicates a State Agency
B	Federal Information Processing System State Abbreviation
C	Program Code
D	Ground-Water Code
E	Optional free characters
F	Indicates an EPA Regional Office or other Federal Agency
G	EPA Region Represented, in this case Region V

4.3.2 Station Codes

Station codes are codes which identify the specific station within the monitoring network from which the data were taken. For ground-water monitoring data, each well is considered a "station". Each station must have at least one, but may have up to four station codes:

- One primary station code, which is required
- Up to three secondary station codes, or "aliases", which may be assigned to a well, but are not required. These are used for the purpose of cross referencing stations for cooperative monitoring and to facilitate the retrieval process.

Station codes may be numeric, alphabetic, or a combination of both. The two important requirements for station codes are that the primary code may not exceed 15 characters in length. A user may create up to 3 secondary station codes. The 1st and 2nd secondary station codes may be up to 12 characters in length, and the 3rd secondary station code may be up to 10 characters in length. Each code, whether it is primary or secondary, must be unique from all other station codes already stored under a particular Agency code.

4.3.2.1 Primary Station Codes

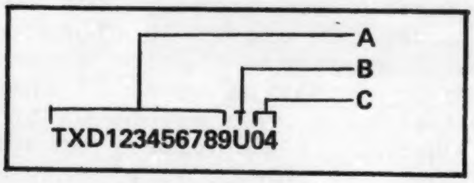
The primary station code for ground-water monitoring wells should be developed in one of two ways. If the monitoring well is located at a facility with a Dun and Bradstreet (D&B) that D & B number should make up the first 12 characters of the code. D & B numbers already exist for most regulated facilities, and should not be "made up" arbitrarily by the user. D & B numbers for facilities may be identified through EPA's FINDS Data Base. Users should contact the group that maintains FINDS in the EPA Regional Office to identify whether or not a D & B number already exists for their facility. If not, the FINDS group will have one created.

If the well is not at a facility with a Dun and Bradstreet number, for example a state ambient ground-water monitoring network, the primary station code may start with the letters "GDW" which will indicate that the data is from a ground-water monitoring station and not registered in the FINDS data base. The prefered method of developing primary station numbers at any facility is through the FINDS data base managers since FINDS serves as a cross-reference between EPA data bases. The "GDW" prefix is an exception to this convention and use should be restricted to cimcumstances where a D & B number is not appropriate.

The RCRA program has specified that the primary station code for groundwater monitoring should include the following three elements:

- Facility Dun & Bradstreet number of facility
- Relative position of the well to other wells for that waste management area or site (i.e., up- or downgradient)
- Unique number of the well for that waste management area.

For example, a primary station code for a RCRA ground-water monitoring well may look like:



Key

A	**Dun and Bradstreet Number**
B	**Relative position of the well**
C	**Well number**

The first 12 characters of this primary station code make up the Dun & Bradstreet (D & B) number of the facility at which the station is located. The D & B number of each facility is unique, and is used as a standard for many EPA (and other) data bases.

The character that follows the D & B number in the STORET primary station code (the thirteenth of the 15 characters) for wells is an alphabetic character that describes the relative position of the well to the waste management area. The thirteenth character should be a value of "D" for downgradient or a value of "U" for upgradient.

If another code is needed (to represent a different type of station designation), users should contact OSW and inform them of this need. OSW will oversee creation and documentation of the new code.

The last two of the fifteen primary station code characters are for assigning a number to each monitoring station that is unique for that waste management area. Stations may be numbered sequentially starting from the first upgradient station, and increasing by one or more in a clockwise direction. Sequential numbering is particularly meaningful if additions or deletions of stations are not expected. However, as changes are likely to happen during the regulated life of the facility, just assigning 2-digit station numbers that are not sequential (but are unique for each station is acceptable. Ninety-nine stations may be stored in this fashion. Should the user need to number more than 99 stations letters of the alphabet should be used (for example, A0, A1, A2, etc., up to A9, and the B0, B1, etc).

4.3.2.2 Secondary Station Codes

Assignment of the secondary station codes for a ground-water monitoring station is left up to the user. Users may enter any numbering scheme they wish for the station "alias". Users may be interested in having the secondary station code be any of the following:

- The permit number for any permits which have been issued to the facility
- An identifier for the district or region in which the facility is located
- An internal numbering scheme.

Users may keep in mind that data retrievals may be based on any of the station codes, not just the primary, station code. For that reason, each station code, regardless of whether it is primary or secondary, must be unique.

4.3.3 Station Naming Conventions

The "station location" or "station name" is a required data element in the STORET station header. No data selection may be made based on the information appearing in the station name, nor does the station name appear in every output report. However, it is one of the few opportunities for users to enter a brief textual description of a station.

Station names may be up to 48 characters in length. Users may have to abbreviate some words in the station name in order to enter all the needed information within the 48-character length limit.

The RCRA program has developed a specific convention they would like used by users naming RCRA monitoring stations. This format can serve as a model for other programs.

The STORET station name for RCRA stations should have the following items of information:

- Facility name
- Type of waste management area
- An indication that the data is collected from the station under RCRA
- The position and internal number of the station.

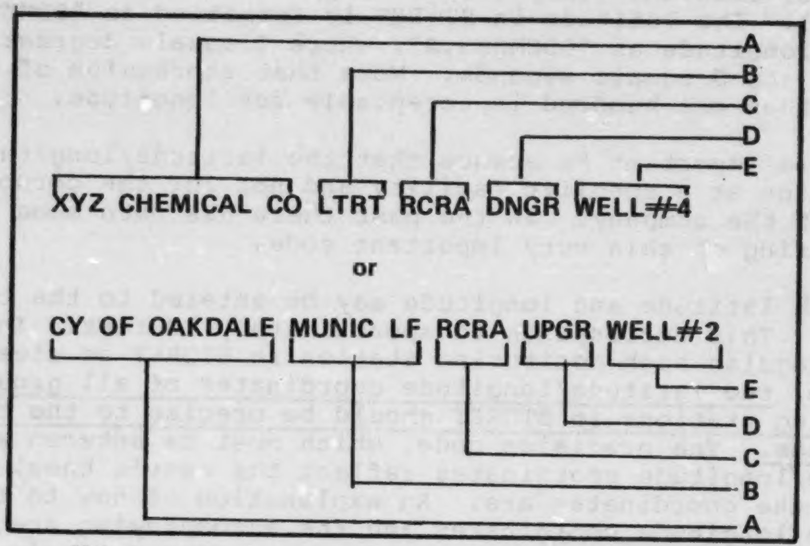
The facility name used for the station name in STORET should resemble the primary facility name in the FINDS data base as closely as possible. Users may find out the exact name of the facility as it has been entered in FINDS by calling the FINDS group in the EPA Regional Office.

The next component of the station name should be the type of waste management area being monitored. For example, the type of waste management area might be a landfill or a surface impoundment.

The third component of the station name should simply be "RCRA". This is entered to distinguish the station as one located in a controlled hazardous waste facility.

The last component of the station name should be an identification of the position and number of the station amongst the RCRA stations for this waste management area. This component should have the same information as that in the last three digits of the primary station code, but presented more explicitly, such as "UPGR WELL#1" instead of "U01".

Some examples of complete station names for RCRA stations include:


A
B
C
D
E
XYZ CHEMICAL CO LTRT RCRA DNGR WELL#4
or
CY OF OAKDALE MUNIC LF RCRA UPGR WELL#2
E
D
C
B
A

Key

A	Facility Name
B	Type of waste management area
C	Program under which data collected
D	Position of station (well)
E	Internal station (well) number

4.3.4 Station Location Identification

There are several data elements in the STORET station header that identify the location of the station. These include:

- The latitude/longitude coordinates of the station (plus a precision code)
- The hydrologic location of the station, expressed as major/ minor/sub-basin codes and names
- The state and county in which the station is located
- The USGS hydrologic unit in which the station is located.

An explanation of how to enter these locational data elements for ground water monitoring stations is given in the following sections.

4.3.4.1 Latitude/Longitude and Precision Codes

Latitude/longitude coordinates are required data elements for all STORET stations (they are two separate station header data elements). The latitude in STORET is formatted as "DDMMSS.S" and the longitude as "DDDMMSS.S", where D equals degrees, M equals minutes, and S equals seconds. Note that expression of degrees greater than one hundred is acceptable for longitude.

It is important to ensure that the latitude/longitude is for the station at a specific facility and not for the corporate office of the company. In the past there has been some errors in the entering of this very important code.

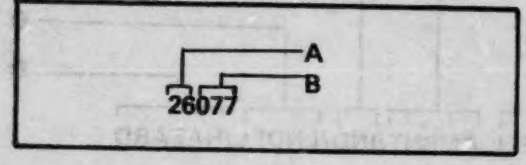
Both latitude and longitude may be entered to the tenths of seconds. This corresponds to approximately 10 feet. In order to distinguish each monitoring station in STORET as clearly as possible, the latitude/longitude coordinates of all ground-water monitoring stations in STORET should be precise to the tenths of seconds. The precision code, which must be entered with the latitude/longitude coordinates reflect the user's knowledge of how precise the coordinates are. An explanation of how to enter latitude/longitude coordinates and the accompanying precision code may be found in Chapter WQ-DE of the STORET User's Handbook (February 1982).

4.3.4.2 Major/Minor/Sub-Basin Codes and Names

Ground-water Users must also identify the hydrologic basin in which the station is located. Users should identify the major, minor, and sub-basins in which the facility or study area at which the station is located. These are defined in Appendix C of the STORET Users' Handbook, (February 1982). Identification of the aquifer which is being monitored is done in the parametric data field. This is described in Section 4.6.

4.3.4.3 FIPS State/County Codes

To identify the geopolitical location of the station, users must use the Federal Information Processing System (FIPS) code for state and county. FIPS codes are five-digit codes, the first two representing the state and the last three representing the county. Users should enter the FIPS codes and state/county names as they are shown in Appendix C of the STORET User's Handbook (February 1982). For example, the total FIPS code for a site in Kalamazoo County, Michigan would be:



Key

A **State code for the State of Michigan is 26**

B **County Code for Kalamazoo in Michigan is 077**

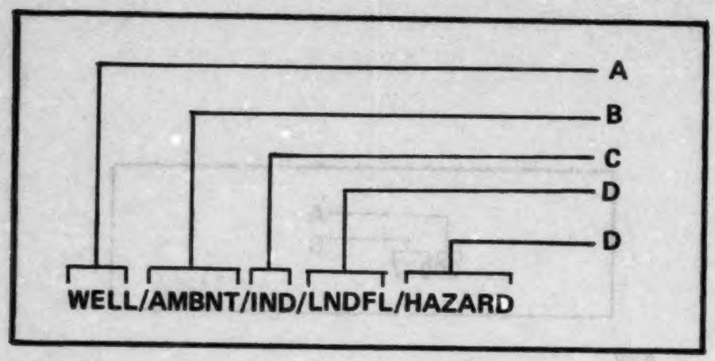
4.3.5 Station Type Codes

Station type code are those station header data elements that describe the type and purpose of the monitoring station. STORET currently has several categories of station type codes. In STORET terminology each category is called a level. Different levels are required depending on the type of data you are entering (Ground-Water, Surface Water POTW, sediment, or biological)

Existing and planned station type codes of particular importance to Ground-Water/STORET users are highlighted in Exhibit 4-1. Many of the station type codes that are recommended for the station headers of ground-water monitoring wells are not of the "required" type for STORET. However, in order to completely distinguish ground-water monitoring stations from others in STORET, they should be used.

Users are required to specify one level and one level two code for each station entered into STORET. The station codes in levels three through five are optional and may be used in any combination to further describe the sampling site. For example, with ground-water data level 4 codes are not pertinent. However, using two level 5 codes may make station identification easier.

Users must string together station type codes relevant to their station. For example, a station monitoring a hazardous waste landfill located in an industrial facility might have a station type code of:



Key

A	Level 1 Code
B	Level 2 Code
C	Level 3 Code
D	Level 5 Code

The complete list of valid STORET station type codes may be retrieved in the on-line data set called "STORET.HELP.STATION.TYPE".

4.3.6 Station Depth

The station depth field in the STORET station header is used, for surface water stations, to store the total depth (i.e., from surface to bottom) of the point where the sample was taken. Ground-Water/STORET users may store the aquifer thickness, at the point where the well is located, in the station depth field.

4.3.7 Hydrologic Unit Code

The hydrologic unit code of the STORET station header is an eight-digit code representing the USGS hydrologic unit in which the station is located. The components of the codes represent hydrologic region, sub-region, accounting unit, and cataloging unit. This coding scheme represents different basin designations than the major/minor/sub-basin fields and is required by STORET. Exhibit 4-2 depicts the scheme of USGS hydrologic unit designations. Clearer, larger-scale maps titled Accounting Units of the National Water Data Network of Hydrologic Units may be obtained from the Geological Survey.

EXHIBIT 4-2

Recommended STORET Station-Type Codes for Ground-Water Monitoring Stations

Level	Requirement	Code	Definition
1	Required, 1 only	WELL	Station samples from a well.
		SPRING	Station samples from a spring. A natural flow of ground water from the earth which feeds into a stream or other body of water.
2	Required, 1 only	AMBNT	Indicates monitoring of ambient conditions in the environment as opposed to within a facility or in the effluent.
		NONAMB	Indicates monitoring at or within a man-made facility or in the effluent.
3	Optional, 1 only	MUN	Municipal water supply and/or sewage treatment.
		IND	Industrial facility.
		CMBMI	Combined "MUN" and "IND."
		AGRI	Agricultural. Includes raw crops, feedlots, grazing, and silviculture.
		DOMEST	Domestic (residential) domicile or facility. Includes water supplies and on-lot septic systems for private dwellings.
		ABANDN	The station from which samples are gathered is abandoned.
		DISPOS	Waste disposal facility.

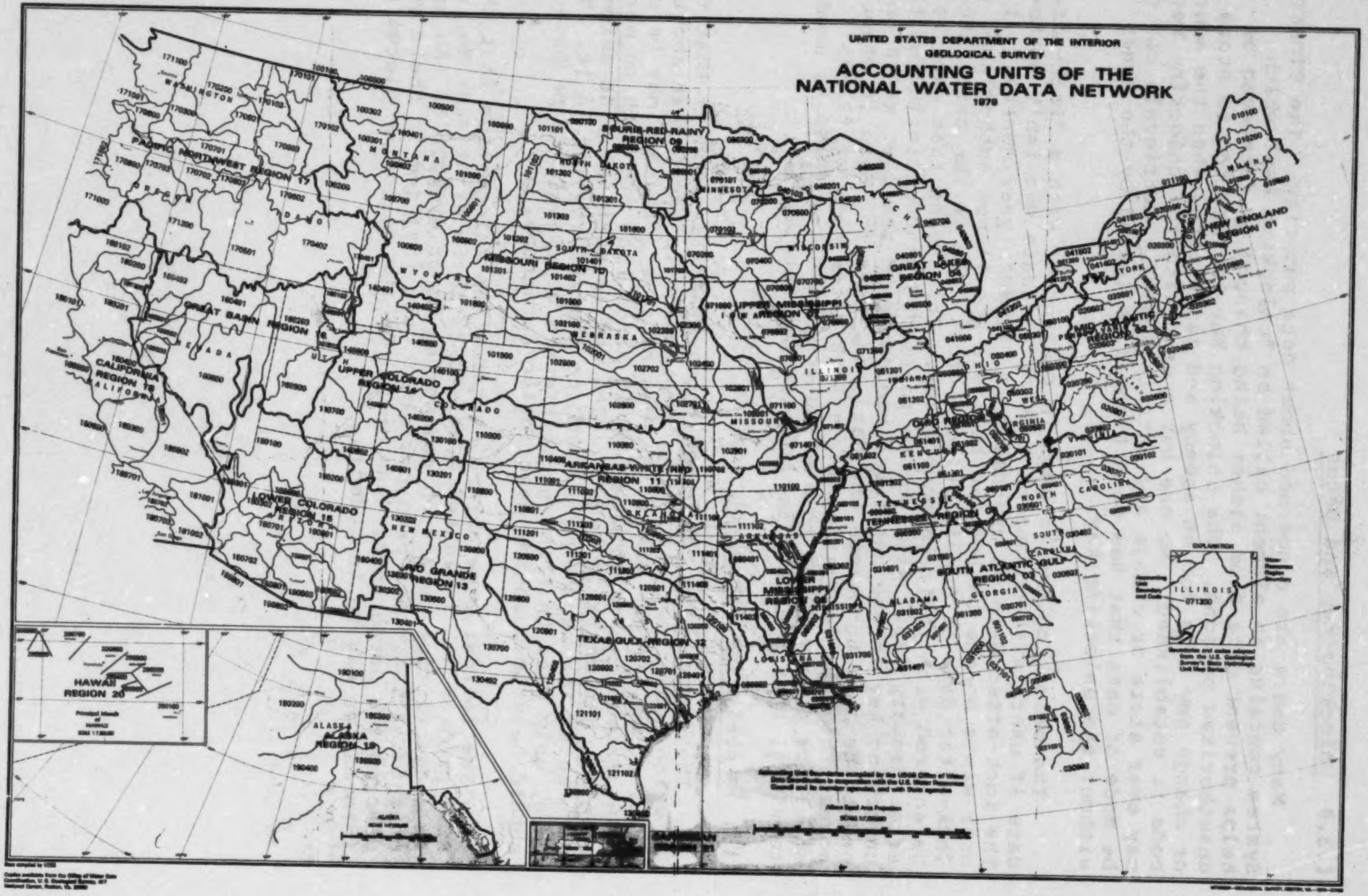
EXHIBIT 4-2 (continued)

Recommended STORET Station-Type Codes for Ground-Water Monitoring Stations

Level	Requirement	Code	Definition
4	None recommended for ground-water monitoring stations (wells)		
5	Optional, as many as are appropriate should be entered	HAZARD	Site of hazardous or toxic wastes.
		LNDFL	Landfill.
		IMPDMT	Impoundment. Includes waste pits, treatment lagoons, settling ponds, and evaporation ponds.
		LNDTRT	Land treatment area.
		UPGR	Upgradient of a well or spring.
		DOWNGR	Downgradient of well or spring.
		RCRA	RCRA monitoring site.
		CERCLA	"Superfund" monitoring site.
		INJECT	Site where liquid waste has been injected under ground as a means of disposal.
		SUPPLY	Water supply storage or treatment facility.
		HRZTL	Horizontal well.
		TUNNEL	An underground corridor.
		GALERY	An artificial underground structure implanted to collect ground water.

Exhibit 4-3

USGS Map-Accounting Units of the National Water Data Network


UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
ACCOUNTING UNITS OF THE NATIONAL WATER DATA NETWORK
1978
NEW ENGLAND REGION 01
MID-ATLANTIC REGION 02
SOUTH ATLANTIC-GULF REGION 03
GREAT LAKES REGION 04
OHIO REGION 05
TENNESSEE REGION 06
UPPER MISSISSIPPI REGION 07
LOWER MISSISSIPPI REGION 08
SOURIS-RED-RAINY REGION 09
MISSOURI REGION 10
ARKANSAS-WHITE-RED REGION 11
TEXAS-GULF REGION 12
RIO GRANDE REGION 13
UPPER COLORADO REGION 14
LOWER COLORADO REGION 15
GREAT BASIN REGION 16
PACIFIC NORTHWEST REGION 17
CALIFORNIA REGION 18
ALASKA REGION 19
HAWAII REGION 20
EXPLANATION
ILLINOIS
071300

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4.3.8 Unlocking Key and Dates

Many users are concerned about data security. The STORET System contains an element called an "unlocking key" which helps prevent data from either being changed or retrieved by unauthorized persons. The unlocking key is required to store or change any data for an agency and is selected when the agency code is established. No one but a user with the unlocking key may ever store or change any data in STORET. Retrievals can not be made of data that has been flagged as locked by the owner without the unlocking key.

The unlocking key is used in conjuction with a "lock-after" date if users wish no one to look at the data who isn't authorized. The lock-after date is expressed as "YY/MM" (year/month). If a user wants no one to look at the data who is not authorized, a lock-after date of 50/01 (or some other date in the past) should be entered with their unlocking key. This means that data sampled after January 1950, will not be retrieved without including the unlocking key in the retrieval request. If the user wants no one to be able to change the data, but does not mind if others access the data in retrievals, a lock-after date of "99/99" should be entered. As this is an invalid date, 99/99 is used to signal that the data is unlocked for retrieval.

4.4 Descriptive Paragraph

The descriptive paragraph for a STORET station is that field in which a user may store any information in any format about the station (well) they wish. The descriptive paragraph may be up to 1080 characters and composed of 15 lines that are each no more than 72 characters in length. Its use is optional. No automated data selection may be made based on the information in it. Therefore, only data on which no retrievals are likely to be based should be stored in the descriptive paragraph.

The following paragraph contains the information that the RCRA program has indicated RCRA STORET users might want to include in a descriptive paragraph and serves as an example of the type of information other programs might want included in their users descriptive paragraphs. Any or all of the following pieces of information may be included:

- Total number of upgradient and downgradient monitoring stations at the facility, and relation of this station to the others, for example:

UPGRADIENT WELL #3 OF 20 UPGRADIENT AND 60 DOWNGRADIENT RCRA MONITORING WELLS

- Type of business conducted at the facility
- Permit and/or enforcement status of the facility
- History of the facility, including any recent spills or other permit violations
- RCRA-regulating agency (e.g., EPA or State)
- Other permits given to the facility, including Federal and other
- Land use of the surrounding area
- Potential targets or nearby sensitive ecosystems
- Proximity and position relative to drinking water sources
- Contacts from whom further information about the facility may be obtained
- Other non-RCRA monitoring points which may be located at or near the facility.

Complete instuctions on how to create a descriptive paragraph for STORET stations may be found in Chapter WQ-DE of the STORET User's Handbook (February 1982).

4.5 Parametric Data Field

4.5.1 Formatting Information

It should be noted that the storage format to be used for information stored in the parametric data field is not the same as for the station and descriptive paragraph fields, which was ?01. Although there are several formats which can be used with the parametric data field, only the ?00 format is recommended for users inputting ground-water data even though users may have used ?01, ?02, ?03 and ?04 to input surface water quality parametric data. The reasons for this are explained below.

Data stored in the Water Quality File of STORET may be obtained from various types of sampling methodologies. The various types of samples from which data is collected are: grab samples; unqualified composite samples; qualified composite samples; multiple samples with a system multipurpose key (SMK); and samples with a user multipurpose key (UMK). For definitions of these various sample types, see Chapter WQ-DE in the STORET User Handbook (February 1982). Only the ?00 and ?04 storage formats enable to user to input information from all of the sample types. This is particularly important for ground-water users because only the ?00 format will enable you to easily store information on replicate samples used in many ground-water programs. Additionally the ?00 format has the flexibility to store the data utilizing either the parameter code followed by a value approach or a matrix approach which requires fewer keystrokes. It is recommended that the ?00 procedure be used to store all the parametric ground-water data. Complete documentation of the ?00 format, is contained in "STORET.HELP.SEMINAR.DOC.STORAGE"

The STORET command procedure %EASYSTOR allows users to interactively create storage transactions for the entry of either station location information or parametric data into the data base. For station location data storage, this procedure is particularly useful and efficient when a relatively few stations (say, up to a dozen or so) are to be entered into the system. The procedure prompts for each item of station location data, and consequently, users need not be concerned about column placement and other station storage card format requirements. For parametric data storage, data may be entered using any of the five (?00/01/02/03 or 04) storate procedures. Again, this procedure is most efficient (in terms of user time and computer costs) when there is a relatively small amount of parametric data to be added to the system.

4.5.2. Inputting Data

There are a number of types of ground-water monitoring information that should be stored in STORET's parametric data field. These include:

- Station Descriptors:
  - Physical setting descriptors
  - Well descriptors

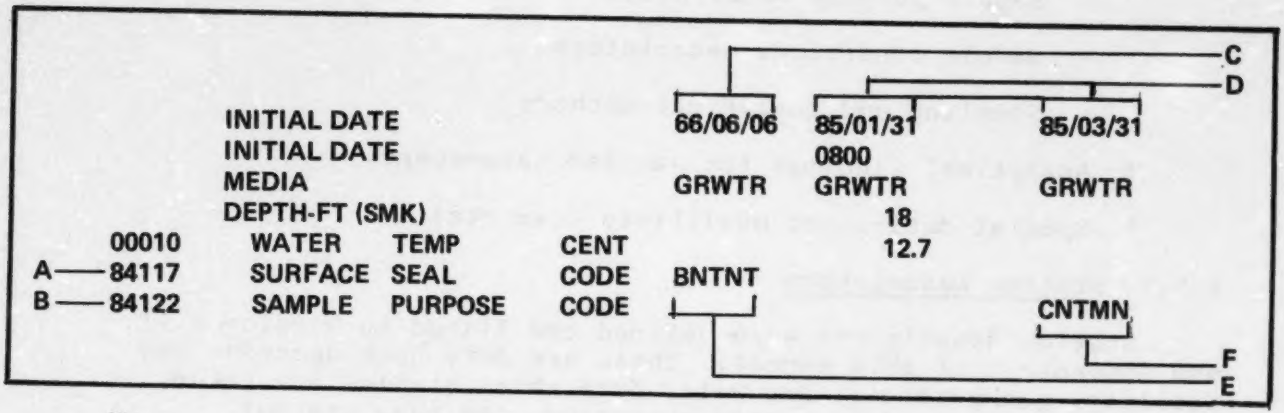
- Sample Descriptors:
  - Sample purpose descriptors
  - Sample conditions descriptors
  - Sampling and analytical methods
- Analytical findings for sampled parameters
- Special data-point qualifiers (remarks).

4.5.3 Station Descriptors

Station descriptors were defined and listed in Section 4.11 and Appendix C of this manual. These are data that describe the facility, geohydrology, and wells from which samples are taken, and are not expected to change over time. As they are not expected to change, it is best that Ground-Water/STORET users store them in the parametric data field with a date specially used for unchanging data. In other words, all unchanging data stored in the parametric data field should be stored as if they were collected on "66/06/06". Dynamic data that will change from sampling event to sampling event will be stored with the date the sample was collected.

Station descriptors include facility descriptors, physical setting descriptors, and well descriptors which were discussed in section 4.1.1 of this Chapter. All facility descriptors, except well ownership, should be stored in the Station Header or descriptive paragraph field. Most physical setting descriptors and well descriptors will be stored in the parametric data field under the "fixed" date ("66/06/06)". Refer to Appendix A to see which physical setting descriptors and well descriptors must be stored in the Station (well) Header, Descriptive Paragraph and Parametric Variable Date Fields. Unchanging date, data stored in the parametric data field might look like:

This example is from a section of a STORET "ALLPARM" retrieval output.



```
                     INITIAL DATE                     66/06/06  85/01/31       85/03/31
                     INITIAL DATE                               0800
                     MEDIA                            GRWTR     GRWTR          GRWTR
                     DEPTH-FT (SMK)                                 18
        00010          WATER     TEMP       CENT                    12.7
        84117          SURFACE   SEAL       CODE      BNTNT
        84122          SAMPLE    PURPOSE    CODE                                CNTMN
```

Key

A	Parametric station descriptor
B	Parametric sample descriptor
C	Fixed date
D	Variable date
E	Codes representing Bentenite for the well surface seal
F	Code indicating that the well was sampled to determine ground-water contamination

Many of the station descriptors that will be stored in the parametric data field will be stored under parameter codes whose values are coded (e.g., drilling method and drilling fluid from the example). This means that the values given to each data element will be a code that represents something. To identify what the code represents, the user must look up its definition in a table. The site descriptor parameter codes for ground-water data, their coded values and their definitions may be found in Appendix B of this report. For certain physical setting descriptors, namely "Geologic age or formation name" and "Aquifer name", the coded values are presented in Appendix H.

4.5.4 Sample Descriptors

Sample descriptors were defined in Section 4.1.2 of this manual. These are data that describe the sample purpose, sampling conditions, and sampling/ analytical methodology, and are expected to change over time.

Sample purpose descriptors, sampling conditions descriptors, and some sampling/analytical methods descriptors should be stored much the same way as any other "usual" parametric data in STORET, i.e., they should be stored with the analytical findings for each sampling event (special procedures for many of the sampling and analytical methods data are described below). Many of these data elements have coded data values. The parameter codes, value codes, and definitions for sample purpose, sampling conditions descriptors, and testing/analytical methods can be found in Appendix F.

4.5.4.1 Expanded Sample Key

Ground-water sampling and analytical methods for each sampling event will, for the most part, be stored in special STORET key fields which are part of the parametric data field. These fields, known as "media, SMK, UMK", have special ground-water applications which will be explained in the following paragraphs. Additionally they can only be used with the ?00 format.

The ?00 storage format was developed to allow the storage of samples taken from media other than water and to enable storage of additional sample information that is not possible with the other STORET formats. Every sample stored in STORET must be uniquely identified by date, time, and depth. The ?00 format allows you to further identify the sample via an expanded sample key which in addition to date and time also specifies the media, the system multi-purpose key (SMK), and the user multipurpose key (UMK). For samples other than water or water qualified samples (bottom, core etc.), the expanded sample key must be used.

4.5.4.1.1 Media Key

The media key identifies the medium in which sampling was done (e.g. water, sediment, etc). For ground water there are currently two media keys: "GRWTR" and "RCRAGW." "GRWTR" is to be used by all programs except RCRA. The RCRA Program has designated its own media key "RCRAGW" which is to be used for inputting RCRA ground-water monitoring data. Any program that wishes its own media key can develop its own code. This option is currently being investigated at the Agency.

4.5.4.1.2 System Multipurpose Key (SMK)

When doing ground-water monitoring it is common to extract more than one sample per monitoring station. There are several ways to obtain multiple samples and for quality assurance purposes it will be beneficial for STORET/Ground Water users to be able to distinguish the manner in which multiple samples were obtained. The system multipurpose key enables users to make this distinction. A brief review of sampling is included here which will help explain the coding used with the system multipurpose key.

There are three common methods for obtaining mutiple samples from ground-water monitoring stations.

- Several samples may be taken from the same sample point and placed into seperate sample bottles. For the purpose of this manual each individual sample of the total set will carry its own unique number.
- One sample may be taken from the sample point; immediately divided in the field and placed into different sample bottles. Each portion of the original sample now residing in separate sample bottles will be called a "field replicate" in this manual.
- One sample may be taken from a well and not divided into seperate sample bottles until it arrives at the laboratory. Each portion of the original sample now residing in sample bottles will be called a "laboratory replicate" in this manual.

It should be understood that when multiple samples are indicated on a data sheet it may mean that any one of the above methods was used to obtain the multiple sample or that a combination of the above methods was used to obtain the multiple sample. The SMK code will enable a STORET/Ground-Water User to determine whether the ground-water data is a multiple sample, what method(s) was used to obtain the multiple sample, how many multiple samples were taken, and which one of the multiple samples the data you are examining came from.

This information is obtained via the 6 digit SMK code. Each of the first 4 digit positions of the code signifying a specific piece of information. At this time the last 2 digits of the code will appear as zeros because no specific pieces of sampling information have yet been defined for these positions. One SMK will be entered for each sampling event (each set of multiple samples will be considered a sampling event).

The information conveyed in the first 4 digit positions of the SMK is summarized in the table on the following page.

Digit Position	Component Definition
1	Identifies whether the sample is an individual sample or one of a multiple sample set. For example, the sample in question could be: one of a set of samples taken from a station (well) and not further divided, one of a set of multiple samples divided in the field, one of a set of multiple samples divided in the laboratory, or a combination of the above The actual number placed in the first digit position will be a valve ranging from 0-7. The meaning attached to the first digit position number can be determined from the table on page 4-29.
2	Identifies which sample in the set of multiple samples the data you are retrieving comes from. For example, if a sampling event from a single sample point has resulted in 4 undivided samples the data values reported for the first sample would have a SMK code with "1" in the second digit position, the data values reported for the second sample would have a SMK with "2" in the second digit position etc.
3	Identifies which one of the field replicates the data you are retrieving comes from. For example, if one sample was collected at the sample point and divided into several sample bottles for analysis in the field, the data values reported for the first "field replicate" would have a "1" in the third digit position of the SMK code, the second field replicate would have "2" in the third digit position of the SMK code etc.
4	Identifies which one of the lab replicates the data you are retrieving comes from. For example, if one sample was collected at the sample point and divided into several sample bottles for analysis in the lab the data values reported for the first "lab replicate" would have a "1" in the fourth digit position of the SMK code, the second "lab replicate" would have a "2" in the fourth digit position of the SMK etc.

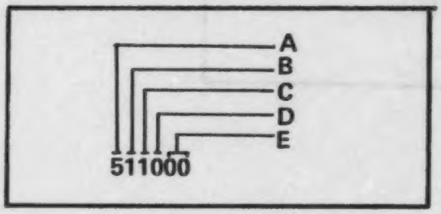
The following table will enable the user to determine the significance of the value appearing in the first digit position of the SMK.

Sample Media Key "SMK" Notation for Ground-Water/STORET User

First digit code	Multiple Sample	Field Replicate	Lab Replicate
0	No	No	No
1	No	No	Yes
2	No	Yes	No
3	Yes	No	No
4	No	Yes	Yes
5	Yes	Yes	No
6	Yes	No	Yes
7	Yes	Yes	Yes

For example, should the first value of a SMK code be 3, the user knows that several separate samples were taken at the sample point. None of these were further divided in either the field or the lab. If the first value of the SMK code were a 5, the user would know that several samples were taken at the station and further that one or all of the samples were subsequently divided in the field so that the data you have retrieved is from a field replicate. Finally, should the first value of the SMK be a 1, the user would know that only one sample was obtained from the sample point but this was divided into several portions in the lab and he/she is retrieving data from one of the lab replicates.

The example of a SMK code illustrated below indicates that the data you are observing is one sample from a set of samples, that this particular sample was the first in the lot. The sample was divided in the field, and that this is the first of the field replicates. There was no division in the lab.



Key

A	5 indicates that this one set of multiple samples which was subsequently divided into field replicates
B	1 indicates that this is the first replicate of the set of samples for this particular station
C	1 indicates that this is the first field replicate
D	0 indicates that the original samples were not divided in the lab.
E	These fields are currently undefined

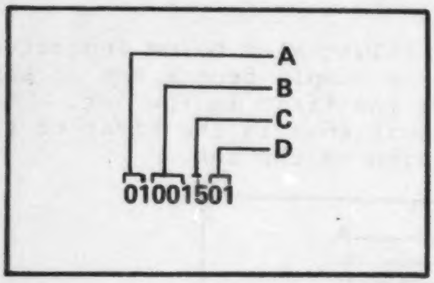
4.5.4.1.3 Users Multipurpose Key (UMK)

The UMK is an 8 digit number which will be used to describe the method in which a ground-water sample was collected and analyzed. There will be one "UMK" per sampling event (each multiple sample may be considered a sampling event). There are 4 components of a UMK code which are defined below.

Digit	Component Definition
1-2	Coded value for sampler type (see Appendix F)
3-5	Identifies up to three different materials making up the sampling equipment, 1-digit each (see Appendix F)
6	Flag for indicating whether the reported values were determined in the lab or the field (see Appendix F)
7-8	Coded value to identify analytical method used to determined reported values (see Appendix F)

The meaning of the Code appearing in each digit position is defined in Appendix F.

A sample UMK is illustrated below:



Key

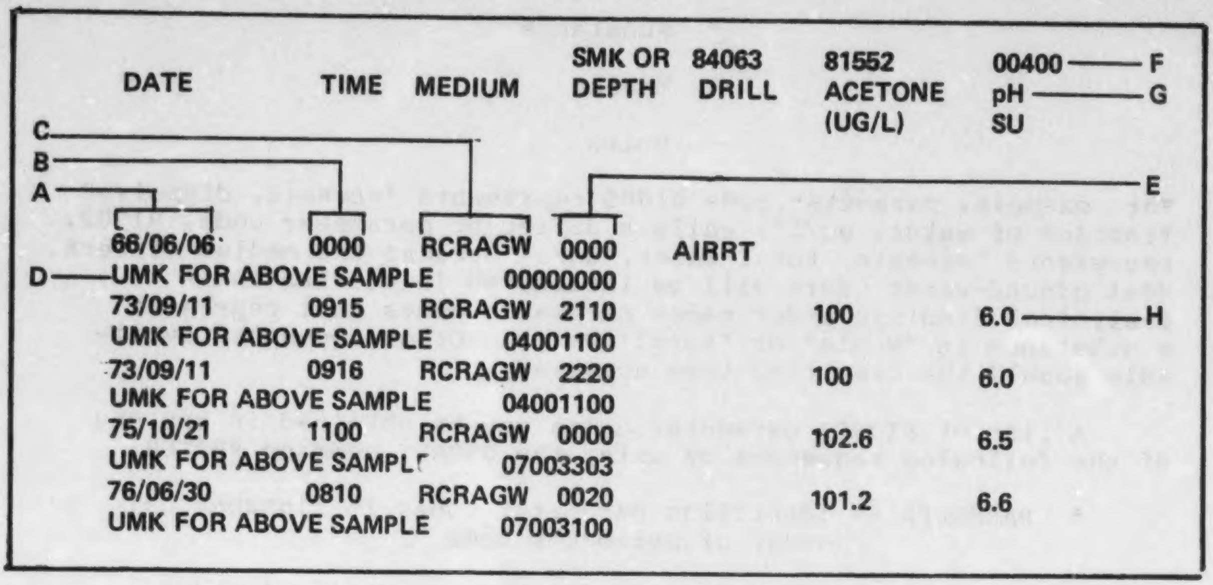
A Sampler type; 01 = Bottom Valve Bailer

B Sampling equipment material; 001 = stainless steel

C Lab or field determination flag; 5 = contract, field

D Analytical method used to determine reported values; 01 = Gas chromatography/mass spectrometry (GC/MS)

An output of data stored in the parametric data field using "media, SMK, UMK" will look like:



```
                                        SMK OR  84063   81552     00400 —— F
     DATE          TIME   MEDIUM        DEPTH   DRILL   ACETONE   pH    —— G
                                                        (UG/L)    SU
C
B
A                                                                       —— E
     66/06/06      0000   RCRAGW        0000    AIRRT
D——  UMK FOR ABOVE SAMPLE               00000000
     73/09/11      0915   RCRAGW        2110            100       6.0   —— H
     UMK FOR ABOVE SAMPLE               04001100
     73/09/11      0916   RCRAGW        2220            100       6.0
     UMK FOR ABOVE SAMPLE               04001100
     75/10/21      1100   RCRAGW        0000            102.6     6.5
     UMK FOR ABOVE SAMPLE               07003303
     76/06/30      0810   RCRAGW        0020            101.2     6.6
     UMK FOR ABOVE SAMPLE               07003100
```

Key

A	**Date Sample**
B	**Time Sampled**
C	**Media Code**
D	**UMK Code**
E	**SMK Code or Depth**
F	**Parameter Code**
G	**Parameter Abbreviation**
H	**Parameter Value**

Further documentation and training to store data in STORET's "media, SMK, UMK" fields can be obtained from STORET User Assistance. (800-424-9067) codes for UMK fields can be found in Appendix E.

4.5.5 Analytical Findings

STORET "parameter codes", the computer codes used to store data, usually represent a combination of three items:

- Substance
- Medium
- Units

For example, parameter code 01000 represents "arsenic, dissolved fraction of water, ug/l", while a different parameter code, 01002, represents "arsenic, total water, ug/l" because the medium differs. Most ground-water users will be interested in storing their analytical findings under those parameter codes that represent a substance in "whole" or "total" water. Other codes are available should the user find them necessary.

A list of STORET parameter codes may be obtained in any one of the following sequences by using the STORET command %BATCH:

- PARMALFA -- identifies parameter codes in alphabetical order of parameter name
- PARNUMER -- identifies parameters in numerical order of parameter code
- PARCAS -- identifies parameters and parameter codes in order of CAS number

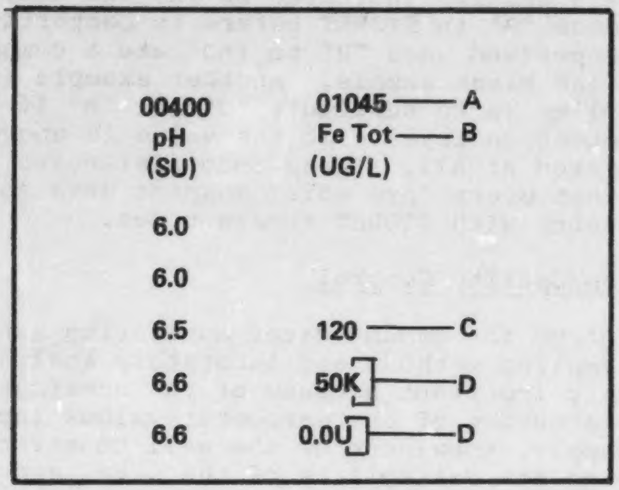
STORET parameter descriptive information and codes may be obtained interactively on the system through the use of the Water Quality Analysis Branch Conversational procedure WQAB PARM and the STORET command %PARABB. The WQAB PARM is quite useful for ground-water data managers and an example is given in Appendix H. If a parameter code for a particular substance does not exist, users may have it created by contacting the STORET Client Services Branch.

Additionally, the parameter codes of interest to RCRA data managers for storing data collected at interim status facilities from fully permitted facilities may be found in Appendices F and G respectively.

4.6 Qualifying "Remarks"

Ground-water data managers may find it necessary to explain something about a particular data point in addition to its numerical value. For example, a data point may be one that is being reported below the detection limit (e.g., "actual value is less than 150 ug/l") or substances may be tested for but not detected.

The STORET System has the capability to store "remarks" with each data value. These remarks flag the data value with such qualifications as "less than", "greater than" and "undetected". Appendix C of this report presents the remark codes that are currently valid in STORET. An example of a parametric data field with data that are remarked could be:



Key

A	Parameter Code
B	Parameter name
C	(Parametric) data value
D	Remark code data value (K = Actual value is known to be less than the value shown, U = material specifically analyzed for but not detected)

Upon data retrieval, users may select any of the following

- All data, regardless of the remark code
- Only data without remarks
- Only data with a specific remark code.

Remark codes may be entered with each data point. They need not always be used. Complete instructions on how to store data with remark codes may be found in Chapter WQ-DE of the STORET Users' Handbook. (February 1982).

It should be noted that some data (Superfund especially) may have remark codes identical to STORET's but with different definitions. These are usually indicated on the lab data forms. For example, remark code "B" in STORET refers to bacterial counts out of range, while Superfund uses "B" to indicate a compound found in a travel or lab blank sample. Another example is that Region IX's office policy is to subsitute "U" for "B" if data value is below the detection level. If the value is above dection level, no data is entered at all. These inconsistancies are mentioned to ensure that users "pre-edit" suspect data so that they maintain consistency with STORET remark codes.

4.7 Quality Assurance/Quality Control

Information on QA/QC for ground-water monitoring such as well construction, sampling methods and laboratory analysis techniques is extremely important because of the numerous factors which may affect the accuracy of the parameter values inputted into STORET. For example, knowledge of the well construction may help the user determine the reliability of the data, and knowing the sampling method used might help the users determine the possibility of sample aeration and a subsequent volitization of organics. Accessibility to this type of information will asist users to determine the usefulness of STORET data for their particular needs.

A parameter QA/QC code named Data Quality (84129) has been added to STORET. As with all parameter codes in STORET, 4 characters of coded values are available for use with the Data Quality parameter code. The presence of this code will enable users to store fairly detailed QA/QC information for each sample.

Quality Assurance/Control is a complex element of a data management system and involves many activities in well location, construction, sampling and laboratory analysis. A decision on how all or some of these activities should be included in the data base has not been made at this time. However, because of the importance of this issue, a preliminary approach has been added to STORET by the Office of Solid Waste. The approach will provide a mechanism for starting to address this topic. This approach is expected to be refined by EPA over the next year.

The 4 digit code contains the following for the specified digit positions.

- The first (left) character will contain a one digit code for the evaluation of well construction. The values in the first digit position will range from 0-2 or be blank. The meaning of each of the possible values is summarized below:

2 -- Well has been EPA/State inspected in the last 5 years and determined to be of high quality

1 -- Well has been properly drilled, constructed of inert materials, properly developed, properly located, and has controls to prevent tampering. Well constructed in accordance to guidance produced by EPA/State.

0 -- Well is known to be inadequate in some manner

blank -- Well information unknown or not stored.

- The second character will contain a 1 digit code for the evaluation of sampling QA/QC. The values of digits in the second position can range from 0-3 or be blank. The meaning for each value is given below:

- 3 -- EPA/State has performed a QA/QC evaluation within the last two years with a positive result

- 2 -- A detailed QA/QC plan with standard procedures and internal checks exists; the objectives of the plan have been verified as being met for at least one year (e.g., RCRA guidance for waste analysis, September 1984)

- 1 -- A detailed QA/QC plan with standard procedures and internal checks exists (e.g., RCRA guidance for waste analysis, September 1984)

- 0 -- No detailed QA/QC plan exists

- blank -- Information unknown or not stored.

- The third position character will contain a 1 digit code for the evaluation of laboratory QA/QC and will have values ranging from 0-3 or be blank. The meaning for these values is identical to position two, described above.

- The fourth position character will contain a 1 digit code for the evaluation of overall QA/QC during the entire sequence of the sampling event. This fourth position character can have values ranging from 0-3 or be blank. The meaning of the values selected for this position is identical to position two above.

5.0 DATA RETRIEVAL

5.0 DATA RETRIEVAL AND ANALYSIS

The STORET System offers users a wide variety of data analyses (also called "retrievals"). To perform an analysis of data, users must create or choose a "retrieval program" that will meet their analytical needs. Chapter WQ-RET of the STORET Users' Handbook (February 1982) presents users with the instructions necessary to succesfully run STORET retrieval programs. The STORET Manager's Guide (February 1982) presents applications of STORET analyses and data that would be of interest to water quality managers.

Chapter 5.0 of this report is meant to introduce Ground-Water/STORET users to STORET's analytical capabilities. It is not an instructional chapter on how to operate STORET retrieval programs. Rather, it presents some of the retrieval programs STORET offers its users, and discusses how Ground-Water/STORET users may find them helpful. It should be noted that there are many more commands that can be used with the sample programs than appear in this manual. A complete explanation of these commands and how they can be used is contained in the STORET seminar documentation which can be obtained from EPA's Client Services Branch (800-424-9067).

5.1 Purpose Of Retrievals

The retrieval you choose will depend on the type of information you need. Some programs are appropriate for those who are interested in graphic displays, others will simply list parameters and station locations, while some programs enable statistical analysis. As an example, the user may wish to do an analysis of wells that have concentrations of $NO_3 > 15$ mg/l and are less than 25 feet in depth, or the user may wish to compare shallow wells, say, 0-25 feet to wells 25-250 feet for nitrates. The STORET program LOC can be used for mapping the two conditions and the STORET program mean with aggregate, and/or the STORET program MSP can be used for statistical analysis.

The following list summarizes programs that will be of interest to ground-water data managers. These are grouped by primary function with the manner in which the output is printed in parenthesis following the program description.

Inventory of Parameters Sampled

INVENT -- lists summary information on parameters sampled (132 character line) (Tabular analyses)

Listings of Actual Sample Values

RET -- tabular listings of selected parameters (non analytical data listing)

ALLPARM -- lists sample values for all parameters (non analytical data listing)

Statistical Analysis of Parameter Data

STAND -- compares actual data values against standards (non analytical data listing and some tabular analyses)

MEAN -- performs statistics on selected parameters (tabular analyses)

REG -- performs linear regression analyses on parametric data (graphic display)

MSP -- plots selected statistics of parameter values as functions of stations (map and graphic displays)

PLOT -- plots data values as a function of time (graphic display)

BROWSE -- interactively retrieves station data with optional graphic output

Station Information Only

STA -- lists station codes for selected agencies (non analytical data listing)

INDEX -- lists station header information (non analytical data listing)

LOC -- plots a map showing station locations (map display)

Programs can also be described by the manner in which the output is formatted. The following 4 sections will give more details on retrieval programs and are organized by output formats. Categories of programs discussed are: Non-Analytical Data Listings, Tabular Analyses, Graphic Displays of Trends, and Map Displays of Data. An example of a retrieval request and a sample output for each type of program will be presented.

At this point in time the majority of ground-water retrieval examples available to the Office of Ground-Water Protection are from RCRA monitoring wells. Consequently the examples given in this version of the manual are from wells at RCRA facilities. It should be stressed that most STORET ground-water data are not from RCRA monitoring wells but rather come from USGS ambient monitoring programs or State drinking water supply wells. As additional data is available the examples in the manual will be changed to reflect other ground water applications. Most of the examples use the South Fremont Chemical Company. It should be noted that although the data in the examples are from actual RCRA sites, the South Fremont Chemical Company is a fictitious name used for example purposes only.

5.2 Non-Analytical Data Listings

STORET offers ground-water users a number of retrieval programs for displaying data in several formats. Specific retrieval programs are discussed below.

5.2.1 STA

STA produces a lists of all primary and secondary station codes associated with a specified Agency code.

For instance a user might wish to obtain a listing of all the RCRA ground-water stations maintained by USEPA's Region 9 office. You might develop a retrieval request which looks like:

```
A——PGM=STA,A=21CARG,——B
```

Key

A	Program to be run
B	Agency Code

The retrieval printout for this STA request appears on the next page.

Exhibit 5-1

Example of The STORET Retrieval Program STA Which Lists Station Codes Associated With a Specific Agency Code *

```
21 CARG                                   STA                                    STORET RETRIEVAL DATE 85/11/05

00P  XXTO80011653DM1  00P  XXTO80011653DM2  00P  XXTO80011653DM3  00P  XXTO80011653DM6  00P  XXTO80011653DM7  00P  XXTO80011653UM4
00P  XXTO80011653UM5  00P  XXTO80011653UM8  00S  WMA1-M1          002  WMA1-M2          00S  WMA1-M3          00S  WMA1-M4
00S  WMA1-M5          00S  WMA2-M6          00S  WMA2-M7          00S  WMA2-M8

NUMBER OF PRIMARY STATIONS FOR THIS AGENCY:          8

NUMBER OF SECONDARY STATIONS FOR THIS AGENCY:        8
```

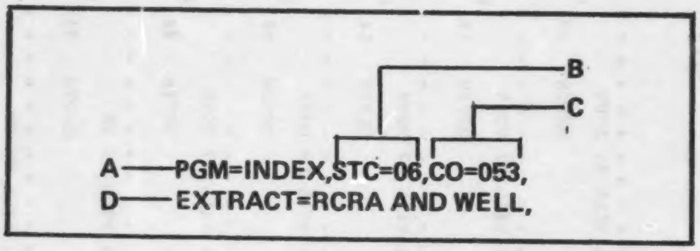
---

*/ Station codes preceded by "OOP" are primary codes, those preceded by "OOS" are secondary codes.

5.2.2 INDEX

INDEX prints the station headers for each site retrieved enabling users to easily examine stations of interest.

For example, a user may want to review the station headers for all the RCRA monitoring wells in Monterey County, California. The "INDEX" program may be chosen to obtain the needed information. The retrieval request could look like:



```
PGM=INDEX,STC=06,CO=053,
EXTRACT=RCRA AND WELL,
```

Key

A	**Program to be run**
B	**State Code Selector; 06 is the FIPS Code for California**
C	**County Code Selector; 053 is the FIPS Code for Monterey County California**
D	**Station Restictor; in this case retrieve only stations that are RCRA monitoring wells**

The printout for this example appears on the next page.

Exhibit 5-2

Example of The STORET Retrieval Program Index Which Lists Station Headers

```
STORET RETRIEVAL DATE 85/11/05               PGM-INDEX - VERSION OF SEP. 25, 1985
                                                                                          PAGE    1
AGENCY            ST-CO COUNTY                                 LOCATION NAME
PRIME STN NO      SECONDARY STATION NUMBERS     STATE          MINOR BASIN
                  LAT/LONG/PREC                 STORED DATE    MAJOR BASIN                   BASIN CODE
                  STATION TYPE CODE                                                   DEPTH
                  RIVER MILE  (   IF    )
                  INDEX       ( PRESENT )                                                   HYDR.UNIT CODE
 = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = MILES ON REACH
11CARG            06053 MONTEREY                CALIFORNIA     XXX MOSS LANDING RCRA WELL M1 DOWN
11T050011653DM1   WMA1-M1                                      CENTRAL COASTAL
                  36 48 14.4 121 46 47.5  2 STORED 850622      CALIFORNIA                      140400
                  /TYPA/IND/AMBNT/WELL/HAZARD/RCRA                              DEPTH   52
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
11CARG            06053 MONTEREY                CALIFORNIA     XXX MOSS LANDING RCRA WELL M2 DOWN
11T080011653DM2   WMA1-M2                                      CENTRAL COASTAL
                  36 48 15.0 121 46 48.0  2 STORED 850622      CALIFORNIA                      140400
                  /TYPA/IND/AMBNT/WELL/HAZARD/RCRA                              DEPTH   59
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
11CARG            06053 MONTEREY                CALIFORNIA     XXX MOSS LANDING RCRA WELL M3 DOWN
11T080011653DM3   WMA1-M3                                      CENTRAL COASTAL
                  36 48 19.4 121 46 48.0  2 STORED 850622      CALIFORNIA                      140400
                  /TYPA/IND/AMBNT/WELL/HAZARD/RCRA                              DEPTH   64
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
11CARG            06053 MONTEREY                CALIFORNIA     XXX MOSS LANDING RCRA WELL M6 DOWN
11T080011653DM6   WMA2-M6                                      CENTRAL COASTAL
                  36 49 10.8 121 46 33.6  2 STORED 850622      CALIFORNIA                      140400
                  /TYPA/IND/AMBNT/WELL/HAZARD/RCRA                              DEPTH   50
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
11CARG            06053 MONTEREY                CALIFORNIA     XXX MOSS LANDING RCRA WELL M7 DOWN
11T080011653DM7   WMA2-M7                                      CENTRAL COASTAL
                  36 48 21.4 121 46 33.6  2 STORED 850622      CALIFORNIA                      140400
                  /TYPA/IND/AMBNT/WELL/HAZARD/RCRA                              DEPTH   46
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
11CARG            06053 MONTEREY                CALIFORNIA     XXX MOSS LANDING RCRA WELL M4 UP
11T080011653UM4   WMA1-M4                                      CENTRAL COASTAL
                  36 48 14.4 121 46 44.4  2 STORED 850622      CALIFORNIA                      140400
                  /TYPA/IND/AMBNT/WELL/HAZARD/RCRA                              DEPTH   71
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
11CARG            06053 MONTEREY                CALIFORNIA     XXX MOSS LANDING RCRA WELL M5 UP
11T080011653UM5   WMA1-M5                                      CENTRAL COASTAL
                  36 49 10.0 121 46 44.4  2 STORED 850622      CALIFORNIA                      140400
                  /TYPA/IND/AMBNT/WELL/HAZARD/RCRA                              DEPTH   76
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
11CARG            06053 MONTEREY                CALIFORNIA     XXX MOSS LANDING RCRA WELL M8 UP
11T080011653UM8   WMA2-M8                                      CENTRAL COASTAL
                  36 49 20.0 121 46 30.0  2 STORED 850622      CALIFORNIA                      140400
                  /TYPA/IND/AMBNT/WELL/HAZARD/RCRA                              DEPTH   56
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
```

5.2.3 RET

RET lists raw data in chronological order, for one to 50 parameters, per retrieval, at selected stations. The listings include sampling dates, times, and depths of the parameters specified in the retrieval request.

If you wanted to obtain all the raw data on water temperature, TOC, conductivity and PH collected at the RCRA monitoring wells of the South Fremont Chemical Company you could make this retrieval request:

```
A——PGM=RET, A=11TOX09,——B
C——S=TXD002209138U01,
D——P=11,P=95,P=400,P=680,
```

Key

A	Program to be run
B	Agency Code
C	Station Code
D	Parameter Codes (11=water temperature, 95=conductivity, 400=pH and 680=TOC)

This printout is illustrated on the next page.

Exhibit 5-3

Example of The STORET Retrieval Program RET Which Lists Raw Data in Chronological Order

```
STORET RETRIEVAL DATE 85/11/05                  PGM=RET                                                              PAGE:    1
                                                                TXD002209138U01 CA1234567
                                                                37 30 00.0 122 00 00.0 1
                                                                SOUTH FREMONT CHEMICAL CO RCRA UPGR WELL#1
                                                                06001   CALIFORNIA          ALAMEDA
TYPA/IND/AMBNT/WELL/HAZARD                                      CALIFORNIA                  140300
                                                                SAN FRANCISCO BAY REGION
                                                                11TOX09    850525
                                                                                  0350 FEET  DEPTH

                           SMK       00011      00095      00400      00680
 DATE    TIME               OR       WATER    CNDUCTVY      PH      T ORG C
 FROM     OF              DEPTH      TEMP      AT 25C                  C
  TO     DAY   MEDIUM     (FT)       FAHN     MICROMHO      SU       MG/L

83/08/25 1045 RCRAGW    310000        63.0       3100      6.58       4.7
 UMK FOR ABOVE SAMPLE-----> 10230620
83/08/25 1045 RCRAGW    320000        63.0       3100      6.63       4.9
 UMK FOR ABOVE SAMPLE-----> 10230620
83/08/25 1045 RCRAGW    330000        63.0       3100      6.64       4.0
 UMK FOR ABOVE SAMPLE-----> 10230620
83/08/25 1045 RCRAGW    340000        63.0       3100      6.65       3.1
 UMK FOR ABOVE SAMPLE-----> 10230620
83/11/16 0900 RCRAGW    310000                   2430      6.43      12.7
 UMK FOR ABOVE SAMPLE-----> 10230620
83/11/16 0900 RCRAGW    320000                   2460      6.47      15.8
 UMK FOR ABOVE SAMPLE-----> 10230620
83/11/16 0900 RCRAGW    330000                   2460      6.43      15.5
 UMK FOR ABOVE SAMPLE-----> 10230620
83/11/16 0900 RCRAGW    340000                   2460      6.39      12.4
 UMK FOR ABOVE SAMPLE-----> 10230620
84/02/15      RCRAGW    310000        65.0       2360      6.60       3.2
 UMK FOR ABOVE SAMPLE-----> 10230620
84/02/15      RCRAGW    320000        65.0       2360      6.55       3.1
 UMK FOR ABOVE SAMPLE-----> 10230620
84/02/15      RCRAGW    330000        65.0       2360      6.54       3.0
 UMK FOR ABOVE SAMPLE-----> 10230620
84/02/15      RCRAGW    340000        65.0       2360      6.50       2.9
 UMK FOR ABOVE SAMPLE-----> 10230620
84/05/14      RCRAGW    310000        66.0       2400      6.50       3.0
 UMK FOR ABOVE SAMPLE-----> 10230620
84/05/14      RCRAGW    320000        66.0       2330      6.46       2.9
 UMK FOR ABOVE SAMPLE-----> 10230620
84/05/14      RCRAGW    330000        66.0       2320      6.50       2.9
 UMK FOR ABOVE SAMPLE-----> 10230620
84/05/14      RCRAGW    340000        66.0       2330      6.47       2.9
 UMK FOR ABOVE SAMPLE-----> 10230620
```

5.2.4 ALLPARM

ALLPARM enables the user to obtain, without specifying any parameter codes, tabular listings of raw data values for all parameters stored at selected stations. Parameter codes can be specified if desired.

A tabular listing of raw data from monitoring wells at the South Fremont Chemical Company would be requested with the following:

```
A——PGM=ALLPARM,A=11TOX09,————B
C——S=TXD002209138U01,
```

Key

A	Program to be run
B	Agency Code
C	Station Code

The printout for the above sample appears on the next page.

Exhibit 5-4

Example of The STORET Retrieval Program ALLPARM Which Provides Tabular Listings of Raw Data Values at Selected Stations

```
STORET RETRIEVAL DATE 85/11/05           PGM=ALL PARM
                                                                                   PAGE:     1
                                                  TXD0022091380U01 CA1234567
                                                  37 30 00.0 122 00 00.0 1
                                                  SOUTH FREMONT CHEMICAL CO RCRA UPGR WELL#1
                                                  06001    CALIFORNIA        ALAMEDA
TYPA/IND/AMBNT/WELL/HAZARD                        CALIFORNIA                 140300
                                                  SAN FRANCISCO BAY REGION
                                                  11TOX09    850525
                                                                     0350 FEET  DEPTH

-----------------------------------------------------------------------------------------------------------------------------------
      INITIAL DATE                           66/06/06  83/08/25  83/08/25  83/08/25  83/08/25  83/08/25  83/11/16  83/11/16  83/11/16
      INITIAL TIME                           1000      1045      1045      1045      1045      1045      0900      0900      0900
      MEDIUM                                 PCRAGW    RCRAGW    RCRAGW    RCRAGW    RCRAGW    RCRAGW    RCRAGW    RCRAGW    RCRAGW
      DEPTH-FT(SMK)                                 0         0    310000    320000    330000    340000         0    310000    320000
      FINAL DATE(UMK)                        00000000  10230620  10230620  10230620  10230620  10230620  10230620  10230620  10230620
00010  WATFR      TEMP      CENT                                   17.28     17.28     17.28     17.28
00011  WATER      TEMP      FAHN                                   63.0      63.0      63.0      63.0
00076   TURB     TRBIDMTR  HACH FTU                      .3
00095 CNDUCTVY    AT 25C   MICROMHO                      3100      3100      3100      3100                2430      2460
00400    PH                   SU                                   6.58      6.63      6.64      6.65                6.43      6.47
00620  NO3-N      TOTAL      MG/L                   2.900                                                   4.600
00680 T ORG C       C        MG/L                                   4.7       4.9       4.0       3.1                12.7      15.8
00929 SODIUM     NA,TOT      MG/L                  580.00                                                  440.00
00940 CHLORIDE    TOTAL      MG/L                     704
00945 SULFATE    SO4-TOT     MG/L                     250
00951 FLUORIDE   F,TOTAL     MG/L                     .23                                                     .39
01002 ARSENIC    AS,TOT      UG/L                   .001U
01007 BARIUM     BA,TOT      UG/L                     .1U                                                     .1U
01027 CADMIUM    CD,TOT      UG/L                   .001U                                                   .001U
01032 CHROMIUM   HEX-VAL     UG/L                   .005U                                                   .001U
01034 CHROMIUM   CR,TOT      UG/L                    .003
01042 COPPER     CU,TOT      UG/L                     .01
01045   IRON     FE,TOT      UG/L                    .02U                                                     .04
01051 LEAD       PB,TOT      UG/L                    .002                                                   .001U
01055 MANGNESE     MN        UG/L                    .01U                                                    .01U
01077 SILVER     AG,TOT      UG/L                  .0001U                                                   .001U
01087 VANADIUM   V,TOT       UG/L                     .2U
01147 SELENIUM   SE,TOT      UG/L                    .002                                                    .05U
31501 TOT COLI   MFIMENDO   /100ML                    16L                                                       2
32730 PHENOLS     TOTAL      UG/L                    .01U                                                   .005U
39045 2,4,5-TP   WTR SMPL    UG/L                   .100U
39390 ENDRIN               TOT UG/L                 .100U
39400 TOXAPHEN              TOTUG/L                1.000U
39480 MTHXYCLR   WHL SMPL    UG/L                   .200U
39730  2,4-D     WHL SMPL    UG/L                   .500U
39782 LINDANE    WHL SMPL    UG/L                   .050U
70353    TOX     IN WATER  UG/L CL                                                                                   .410      .290
71900 MERCURY    HG,TOTAL    UG/L                   .0001                                                  .0001U
71993 ELEVATN     GW/SL     FEET                                   4.70      4.70      4.70      4.70      4.60      4.60      4.40
72004 PPG/FLOW   PRIOR TO  SMP-MINS                                10.0      10.0      10.0      10.0
72008 TOT DPTH    OF WELL     FT            54.0
73666 CASING     THICKNES      INCH         4.00
73660 WIDTH OF   OPENING.  001 INCH          .02
82546 DEPTH FR   M WL TO   MP  (FT)                                40.00     40.00     40.00     40.00     40.00     40.00     40.00
(SAMPLE CONTINUED ON NEXT PAGE)
```

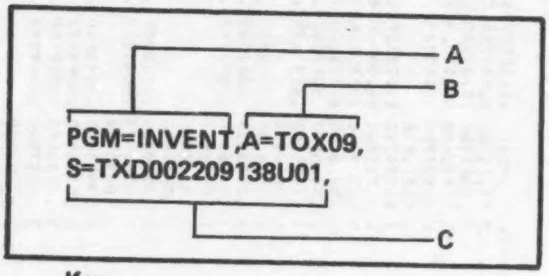
5.3 Tabular Analyses

Several STORET retrieval programs give users a tabular presentation of statistical analyses of data. These are summarized below.

5.3.1 INVENT

Invent retrieves summary information on all the parameters that have been sampled at the stations specified in the retrieval request. Descriptive statistics for each parameter include: the number of observations, the mean value, variance, standard deviation, the maximum and minimum values, and the beginning and ending dates for the data stored.

If you wanted a summary of all the parameters sampled for RCRA at a specific monitoring station at the South Fremont Chemical Company you would make the following retrieval request:



```
PGM=INVENT,A=TOX09,
S=TXD002209138U01,
```

Key

A	Program to be run
B	Agency code
C	Station code

The printout for the request appears on the next page.

Exhibit 5-5

Example of The STORET Retrieval Program INVENT Which Prints Out Statistical Summary Sampled Parameters

```
STORET RETRIEVAL DATE 85/11/05                 PGM=INVENT                                                   PAGE:     1
                                                                 TXD002209138U01 CA1234567
                                                                 37 30 00.0 122 00 00.0 1
                                                                 SOUTH FREMONT CHEMICAL CO RCRA UPGR WELL#1
/TYPA/IND/AMBNT/WELL/HAZARD                                      06001   CALIFORNIA         ALAMEDA
                                                                 CALIFORNIA                 140300
                                                                 SAN FRANCISCO BAY REGION
                                                                 11TOX09    850525
                                                                                      0350 FEET  DEPTH

              PARAMETER                  MEDIUM   RMK NUMBER    MEAN   VARIANCE STAN DEV MAXIMUM   MINIMUM   BEG DATE END DATE
00011  WATER      TEMP      FAHN      RCRAGW             12 64.66700 1.699200 1.303600     66.0     63.0   83/08/25 84/05/14
00076   TURB    TRBIDMTR  HACH FTU    RCRAGW              2 .2300000 .0200000 .1414200       .3       .1   83/08/25 84/02/15
00095 CNDUCTVY  AT 25C    MICROMHO    RCRAGW             16 2564.400 104130.0 322.7000     3100     2320   83/08/25 84/05/14
00400    PH                  SU       RCRAGW             16 6.521300 .0065267 .0807880     6.65     6.39   83/08/25 84/05/14
00530 RESIDUE   TOT NFLT    MG/L      RCRAGW              1 1687.000                       1687     1687   84/02/15 84/02/15
00620  NO3-N      TOTAL     MG/L      RCRAGW              3 4.066700 1.023300 1.011600    4.700    2.900   83/08/25 84/02/15
00680 T ORG C       C       MG/L      RCRAGW             16 6.062500 24.00500 4.899500     15.8      2.9   83/08/25 84/05/14
00929 SODIUM    NA,TOT      MG/L      RCRAGW              3 513.3300 4933.500 70.23900   580.00   440.00   83/08/25 84/02/15
00940 CHLORIDE    TOTAL     MG/L      RCRAGW              2 553.5000 45301.00 212.8400      704      403   83/08/25 84/02/15
00945 SULFATE   SO4-TOT     MG/L      RCRAGW              2 250.5000 .5000000 .7071100      251      250   83/08/25 84/02/15
00951 FLUORIDE   F,TOTAL    MG/L      RCRAGW              3 .2433300 .0197330 .1404800      .39      .11   83/08/25 84/02/15
01002 ARSENIC   AS,TOT      UG/L      RCRAGW       U      1 .0010000                       .001     .001   83/08/25 83/08/25
01007 BARIUM    BA,TOT      UG/L      RCRAGW       U      3 .1666700 .0133330 .1154700       .3       .1   83/08/25 84/02/15
01027 CADMIUM   CD,TOT      UG/L      RCRAGW       U      3 .0073333 .0001203 .0109700      .02     .001   83/08/25 84/02/15
01032 CHROMIUM  HEX-VAL     UG/L      RCRAGW       U      3 .0186670 .0007403 .0272090      .05     .001   83/08/25 84/02/15
01034 CHROMIUM  CR,TOT      UG/L      RCRAGW              1 .0031000                       .003     .003   83/08/25 83/08/25
01042 COPPER    CU,TOT      UG/L      RCRAGW              1 .0100000                        .01      .01   83/08/25 83/08/25
01045   IRON    FE,TOT      UG/L      RCRAGW              1 .0400000                        .04      .04   83/11/16 83/11/16
                                                   U      2 .0200000 .0000000 .0000000      .02      .02   83/08/25 84/02/15
                                                 TOT      3 .0266670 .0001333 .0115470      .04      .02   83/08/25 84/02/15
01051 LEAD      PB,TOT      UG/L      RCRAGW              1 .0020000                       .002     .002   83/08/25 83/08/25
                                                   U      2 .0855000 .0142810 .1195000       .1     .001   83/11/16 84/02/15
                                                 TOT      3 .0576670 .0094643 .0972850       .1     .001   83/08/25 84/02/15
01055 MANGNESE     MN       UG/L      RCRAGW       U      3 .0100000 .0000000 .0000000      .01      .01   83/08/25 84/02/15
01077 SILVER    AG,TOT      UG/L      RCRAGW       U      3 .0137000 .0005189 .0227810      .04    .0001   83/08/25 84/02/15
01087 VANADIUM  V,TOT       UG/L      RCRAGW       U      1 .2000000                         .2       .2   83/08/25 83/08/25
01147 SELENIUM  SE,TOT      UG/L      RCRAGW              1 .0020000                       .002     .002   83/08/25 83/08/25
                                                   U      2 .0300000 .0008000 .0282840      .05      .01   83/11/16 84/02/15
                                                 TOT      3 .0206670 .0006613 .0257160      .05     .002   83/08/25 84/02/15
31501 TOT COLI MFIMENDO     /100ML    RCRAGW              1 2.000000                          2        2   83/11/16 83/11/16
                                                   L      1 16.00000                         16       16   83/08/25 83/08/25
                                                   U      1 2.000000                          2        2   84/02/15 84/02/15
                                                 TOT      3 6.666700 65.33300 8.082900       16        2   83/08/25 84/02/15
32730 PHENOLS     TOTAL     UG/L      RCRAGW       U      3 .0066667 .0000083 .0028868      .01     .005   83/08/25 84/02/15
39045 2,4,5-TP  WTR SMPL    UG/L      RCRAGW       U      2 .1000000 .0000000 .0000000     .100     .100   83/08/25 84/02/15
39390 ENDRIN              TOT UG/L    RCRAGW       U      2 .1000000 .0000000 .0000000     .100     .100   83/08/25 84/02/15
39400 TOXAPHEN             TOTUG/L    RCRAGW       U      2 1.000000 .0000000 .0000000    1.000    1.000   83/08/25 84/02/15
39480 MTHXYCLR  WHL SMPL    UG/L      RCRAGW       U      2 .2000000 .0000000 .0000000     .200     .200   83/08/25 84/02/15
39730  2,4-D    WHL SMPL    UG/L      RCRAGW       U      2 .5000000 .0000000 .0000000     .500     .500   83/08/25 84/02/15
39782 LINDANE   WHL SMPL    UG/L      RCRAGW       U      2 .0500000 .0000000 .0000000     .050     .050   83/08/25 84/02/15
70353    TOX    IN WATER    UG/L CL   RCRAGW             12 10.11600 213.8000 14.62200   35.000     .200   83/11/16 84/05/14
71900 MERCURY   HG,TOTAL    UG/L      RCRAGW              1 .0001000                      .0001    .0001   83/08/25 83/08/25
                                                   U      2 .0010500 .0000018 .0013435     .002    .0001   83/11/16 84/02/15
                                                 TOT      3 .0007333 .0000012 .0010970     .002    .0001   83/08/25 84/02/15
```

5.3.2 MEAN

MEAN does a statistical summarization and sorting on requested parameters at user-specified sites. Mean provides the user with flexibility to combine stations and to group data according to a desired time frame. The statistical analyses that can be choosen include: minimum, maximum, mean, sum of squares, variance, standard deviation and percentiles.

Suppose you were interested in doing statistical analysis on specific parameters that were analyzed as part of the sampling program at the RCRA wells of the South Fremont Chemical company. You would submit the following retrieval request:

```
A——PGM=MEAN,
B——A=11TOX09,S=TX002209138U01,————C
D——P=11,P=95,P=400,P=680,P=1040,P=1051,
E——DG=QYP,
F——SF=NLS2MVDE,
```

Key

A	Program to be run
B	Agency Code
C	Station Code
D	Parameter Codes (P=11=Water temperature °F, 95=conductivity, 400=pH, 680=TOC, 1040=copper and 1051=Total Lead.)
E	The key work DG specifies the data groupings to be used for the statistics calculated.

DG=Q, Calculates summaries by quarters
DG=Y, Calculates summaries by year
DG=P, Calculates summaries for period of record

Additional codes for the keywork DG are:

DG=S, Prints individual samples
DG=M, Calculates summaries by months
DG=G, Calculates summaries by aggregation of all data retrieved regardless of station.

Key (Continued)

F **The keywork "SF" specifies which statistical calculations are to be performed during the retrieval. The values which can be assigned to "SF" are:**

SF=N, Calculates number of observations

SF=L, Calculates minimum value of observations
SF=S, Calculates sum of values
SF=2, Calculates sum of squares
SF=M, Calculates mean (average)
SF=V, Calculates variance
SF=D, Calculates standard deviation
SF=E, Calculates standard error

Additional codes for the keyword SF are:

SF=H, Calculates maximum value of observations
SF=C, Calculates coefficient of variation
SF=F, Calculates flow weighted average, when using this capability, each group of 10 parameters must contain one of the flow parameters.

This printout for the request is illustrated on the next page.

Exhibit 5-6

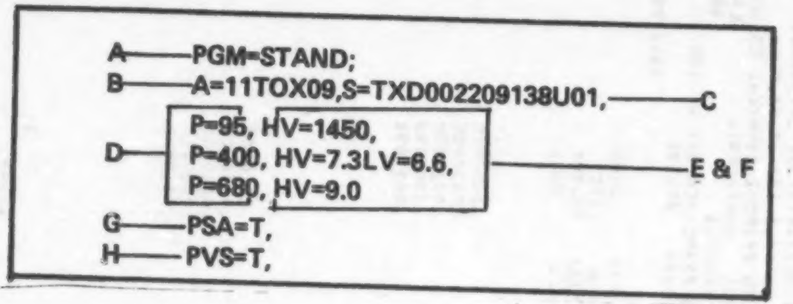
Example of The STORET Retrieval Program MEAN Which Produces Statistical Summaries and Sorting on Required Parameters

```
STORET RETRIEVAL DATE 85/11/05
                                                           TXD0022091380U01 CA1234567
                                                           37 30 00.0 122 00 00.0 1
                                                           SOUTH FREMONT CHEMICAL CO RCRA UPGR WELL#1
                                                           06001   CALIFORNIA         ALAMEDA
TYPA/IND/AMBNT/WELL/HAZARD                                 CALIFORNIA                 140300
                                                           SAN FRANCISCO BAY REGION
                                                           11TOX09    850525
                                                                                0350 FEET  DEPTH

  DATE                  00011      00095      00400      00680     01040      01051
  FROM                  WATER    CNDUCTVY      PH      T ORG C    COPPER      LEAD
   TO                   TEMP      AT 25C                  C       CU,DISS    PB,TOT
                        FAHN     MICROMHO      SU       MG/L       UG/L       UG/L
83/07/01
QUARTER   NUMBER            4          4          4          4                   1
          MAXIMUM     63.0000    3100.00    6.65000    4.90000            .0020000
          MINIMUM     63.0000    3100.00    6.58000    3.10000            .0020000
          SUM         252.000    12400.0    26.5000    16.7000            .0020000
          SUM-SQUAR   15876.0  .3844E+08    175.565    71.7100            .0000040
          MEAN        63.0000    3100.00    6.62500    4.17500            .0020000
          VARIANCE   .0000000   .0000000   .0010173    .662501
          STAND DEV  .0000000   .0000000   .0318944    .813942
          COEF VAR   .0000000   .0000000   .0048142    .194956
          STAND ERR  .0000000   .0000000   .0159472    .406971
83/09/30
83/10/01
QUARTER   NUMBER                       4          4          4                   1
          MAXIMUM                2460.00    6.47000    15.8000            .0010000
          MINIMUM                2430.00    6.39000    12.4000            .0010000
          SUM                    9810.00    25.7200    56.4000            .0010000
          SUM-SQUAR            .2405E+08    165.383    804.940            .0000010
          MEAN                   2452.50    6.43000    14.1000            .0010000
          VARIANCE               724.000   .0011037    3.23348
          STAND DEV              14.9666   .0332223    1.79819
          COEF VAR              .0061026   .0051668    .177531
          STAND ERR              7.48331   .0166111    .899094
83/12/31
83/01/01
YEAR      NUMBER            4          8          8          8                   2
          MAXIMUM     63.0000    3100.00    6.65000    15.8000            .0020000
          MINIMUM     63.0000    2430.00    6.39000    3.10000            .0010000
          SUM         252.000    22210.0    52.2200    73.1000            .0030000
          SUM-SQUAR   15876.0  .6249E+08    340.948    876.650            .0000050
          MEAN        63.0000    2776.25    6.52750    9.13750            .0015000
          VARIANCE   .0000000     119883   .0117885    29.8141            .0000005
          STAND DEV  .0000000    346.242    .108575    5.46023            .0007071
          COEF VAR   .0000000    .124716   .0166335    .597563             .471405
          STAND ERR  .0000000    122.415   .0383870    1.93048            .0005000
83/12/31
```

5.3.3 STAND

STAND compares the observed sample values of parameters specified in a retrieval to a set of specified criteria. For instance, the criteria could be State or Federal standards for various ground-water programs.

For instance if the user wanted to obtain a summary of violations for RCRA monitoring wells at the South Fremont Chemical Company they would request.



```
PGM=STAND;
A=11TOX09,S=TXD002209138U01,
P=95, HV=1450,
P=400, HV=7.3LV=6.6,
P=680, HV=9.0
PSA=T,
PVS=T,
```

Key

A	**Program to be run**
B	**Agency Code**
C	**Station Code**
D	**Parameter codes (95=Conductivity, 400=pH, 680=TOC)**
E	**HV sets the upper limit against which the parameter is to be checked. It applies only to the parameter it follows.**
F	**LV sets the lower limit against which the parameter is to be checked. It applies only to the parameter it follows.**
G	**PSA=T, This command results in the entire sample being printed when any of the parameters are in violation. The values in violation will be indicated with an asterick.**
H	**PVS=T, This specifies that a summary of all the violations is to be printed.**

The printout for this request is illustrated on the following page.

Exhibit 5-7A

Example of The STORET Retrieval Program STAND Which Compares Observed Parameter Values to a Set of Specified Criteria

```
STORET RETRIEVAL DATE 85/11/05  - STAND  - VERSION OF APR. 1983                                    STN   2 PAGE 1.1
VIOLATIONS WITH SUPPORTING PARAMETERS
                                                                      TXD002209138U01 CA1234567
                                                                     37 30 00.0 122 00 00.0 1
                                                                     SOUTH FREMONT CHEMICAL CO RCRA UPGR WELL#1
                                                                     06001    CALIFORNIA          ALAMEDA
                                                                     CALIFORNIA                   140300
,/TYPA/IND/AMBNT/WELL/HAZARD                                         SAN FRANCISCO BAY REGION
                                                                     11TOX09    850525
                                                                                            0350 FEET  DEPTH

                        00095      00400      00680
                       CNDUCTVY     PH       T ORG C
                        AT 25C                  C
    DATE     TIME     MICROMHO      SU        MG/L

  81/11/16  1100        2580.*     6.430*     2.900
  83/08/25  1300        2520.*     6.880      4.100
  83/08/25  1300        2520.*     6.880      8.200
  83/08/25  1300        3520.*     6.880      2.000
  83/08/25  1300        2520.*     6.900      4.600
  83/11/16  1100        2600.*     6.390*     2.800
  83/11/16  1100        2600.*     6.420*     2.600
  83/11/16  1100        2610.*     6.430*     2.700
  84/02/15              2400.*     6.800      2.300
  84/02/15              2390.*     6.700      2.300
  84/02/15              2390.*     6.720      2.300
  84/02/15              2390.*     6.700      2.400
  84/05/14              3000.*     6.380*     2.600
  84/05/14              3060.*     6.350*     2.600
  84/05/14              3040.*     6.370*     2.600
  84/05/14              3060.*     6.370*     2.700
```

Exhibit 5-7B

Example of the STORET Retrieval Program STAND Illustrating Use of STAND Violation Criteria and Statistics

```
STORET RETRIEVAL DATE 85/11/05 - STAND - VERSION OF APR. 1983                                STN  2.SUMMARY.1
                                                       TXD002209138U01 CA1234567
                                                      37 30 00.0 122 00 00.0 1
                                                      SOUTH FREMONT CHEMICAL CO RCRA UPGR WELL#1
                                                      06001   CALIFORNIA        ALAMEDA
                                                      CALIFORNIA                140300
/TYPA/IND/AMBNT/WELL/HAZARD /                         SAN FRANCISCO BAY REGION
                                                      11TOX09   850525
                                                                          0350 FEET  DEPTH

                        SUMMARY OF VIOLATIONS ON SAMPLES COLLECTED FROM 81/11/16 TO 84/05/14

                  00095     00400     00680
                 CNDUCTVY    PH     T ORG C
                  AT 25C               C
                 MICROMHO    SU       MG/L

NO OF VALUES        16        16        16

MEAN              2700.     6.600     3.106

MEDIAN            2590.     6.565     2.600

NO OF VIOLS         16         8         0

PERCENT VIOL      100.       50.        0.

MINIMUM VIOL      2390.     6.350     0.0

MEAN VIOL         2700.     6.392     0.0

MAXIMUM VIOL      3520.     6.430     0.0

MIN CRITERIA*********       6.600 *********

MAX CRITERIA      1450.     7.300     9.000
```

5.4 Graphic Displays of Trends

STORET users may graphically depict the change in concentration of a substance over time, or compare the concentration of one substance to another. These STORET retrieval programs are listed below.

5.4.1 PLOT

The plot program retrieves data from the Water Quality file and plots the values of each selected parameter for each selected station (Y axis) for the specified time period (x axis).

For example, a user may want to see how the concentration of a ground-water contamination indicator parameter has changed between September 1983 and May 1984 at an RCRA upgradient well of the South Fremont Chemical Company. The retrieval request might look like:

```
A——PGM=PLOT,
B——A=11TOX09,S=TXD002209138U01,——C
D——P=95,BD=830901,ED=840531,——E
```

Key

A	**Program to be run**
B	**Agency Code; 11=A Federal Agency performing its own sampling and analysis, TOX=Groundwater toxic data, 09=optional user code**
C	**Primary station code; TXD002209138=Dun and Bradstreet Number, U=relative position of well, which in this case is upgradient and 01=well number. The site selected was an upgradient well at the facility whose Dun & Bradstreet number is TXD002209138.**
D	**Parameter Code; 95=Conductivity at 25°C. This is the ground-water contamination indicator to be plotted.**
E	**Data Restrictor; BD=Beginning Date, ED=Ending Date. The time on the X-axis is to span from September 1, 1985 to May 31, 1983.**

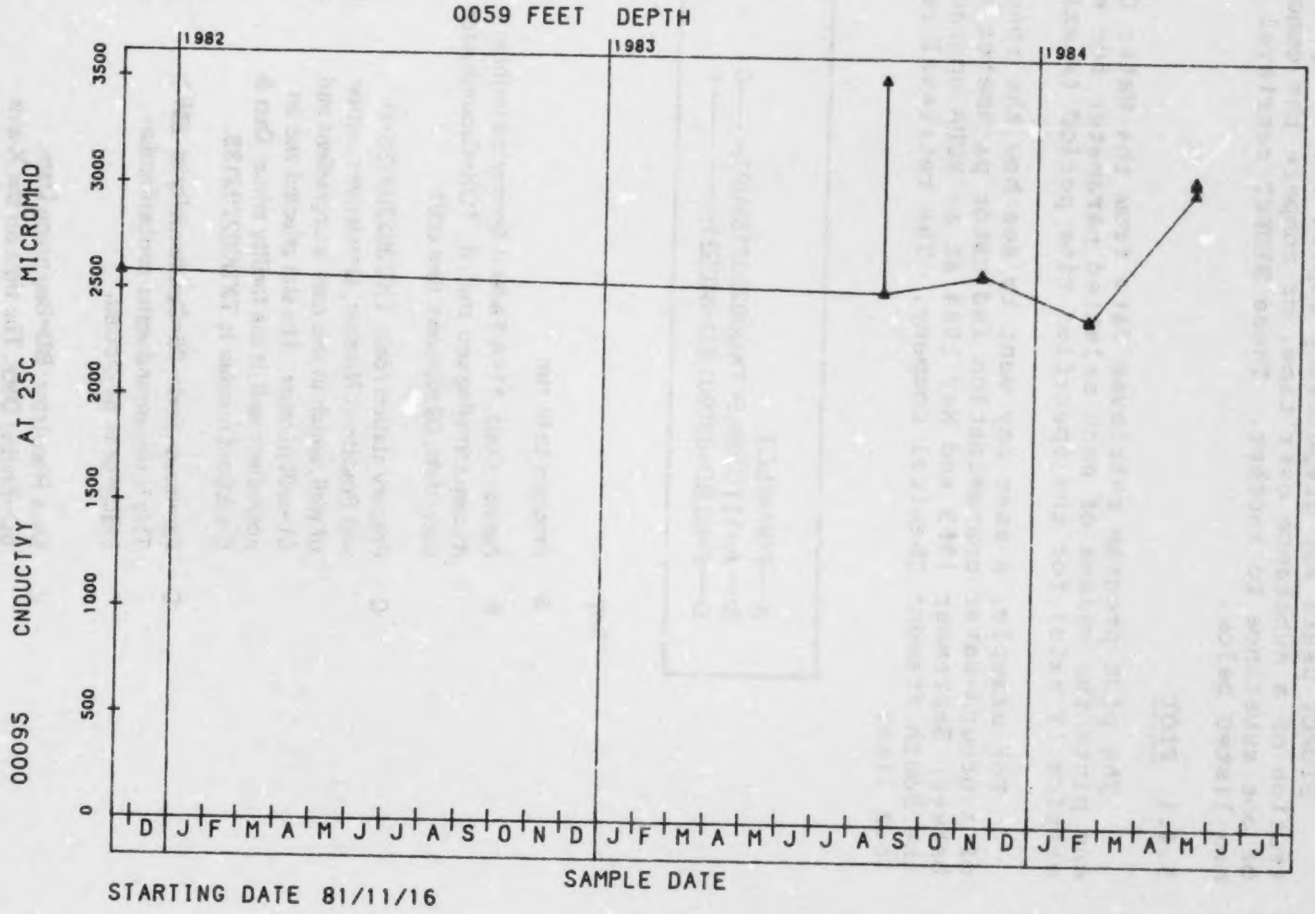
The output from this retrieval request is illustrated in Exhibit 5-8A.

Exhibit 5-8A

Example of the STORET Retrieval Program PLOT Which Graphically Depicts Trends in Concentration Over Time, Shown With Connecting Lines Between Plotted Symbols
This example illustrates how plot handles Split/Replicate Samples

```
STORET
 TXD002209138U01 CA1234567
37 30 00.0 122 00 00.0 1
SOUTH FREMONT CHEMICAL CO RCRA UPGR WELL#1
06001    CALIFORNIA          ALAMEDA
CALIFORNIA                   140300
SAN FRANCISCO BAY REGION
11TOX09    850525
```

```
WEL25     10/11/85   9:18:21.61 PM JES 7525

PLOT COUNTER      6
```



The software of the plot program reads a data value, plots its location, and then draws a line between that location and the previous data value location it plotted.

The order that the plot program receives data values to plot is not dependent on data values but on the parametric data key which includes the depth or SMK field.

This means that data values for the same date may be plotted in any order.

The connecting line drawn from one date's data values to another date's values will not necessarily be from the high or low value for that date but from the last point plotted. This may result in lines being connected at places other than their end points.

Since many ground water samples are collected in duplicate the above situation may occur often. In this type of situation it may be perferable to plot the data points without the connecting lines. The user may also wish to consider this option on a graph that has a large number of data points to avoid drawing too many lines.

To invoke this option the minus sign is used when designating a plotting symbol. The user may also wish to specify the keyword "REGLINE" so that a trend line will be calculated and drawn on the plot.

```
A———PGM=PLOT
B———A=21MIMUSK,S=PWX3,
C———P=95,
D———SYM=-02, REGLINE,———E
```

Key

A **Program to be run**

B **Station PWX3 within agency 21MIMUSK is selected**

C **Data for conductivity is to be plotted (95=conductivity)**

D **A triangle is to be the plotting symbol and the symbols are not to be connected with straight lines as signified by the minus sign in front of 02**

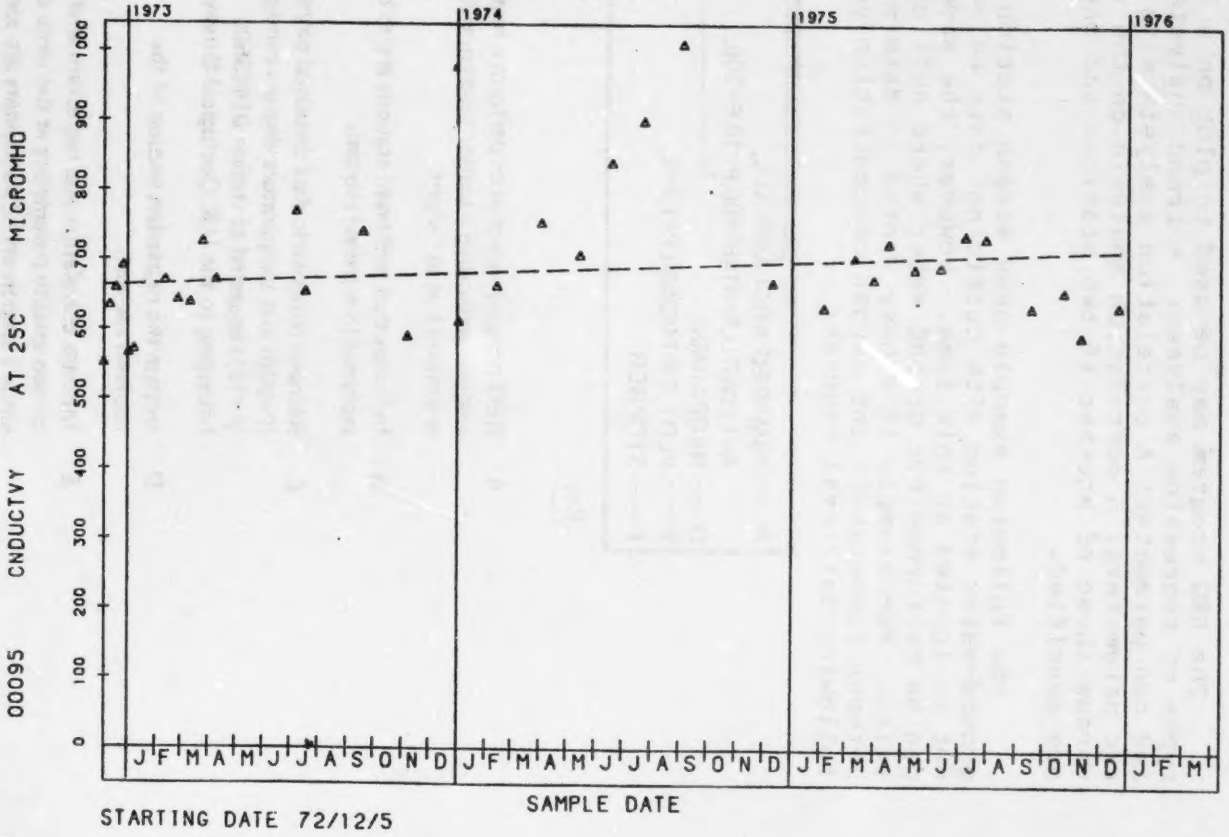
E **Calculate and plot a trend line**

The output from this retrieval request is illustrated in Exhibit 5-8B.

Exhibit 5-8B

Example of the STORET Retrieval Program PLOT Which Graphically Depicts Trends in Concentration Over Time Shown Without Connecting Lines

```
STORET
  PWX3
 43 14 09.0 085 58 01.0 2
 PERIMETER WELL X-3
 26121    MICHIGAN           MUSKEGON
 LAKE MICHIGAN
 MUSKEGON RIVER
 21MIMUSK  780505                   04060101 HQ
                             0059 FEET  DEPTH
```

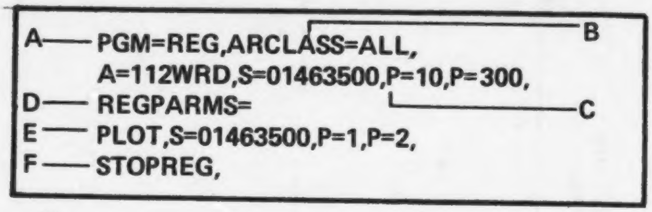


5.4.2 REG

REG performs a regression analysis for the change in substance concentration, either over time or in relation to another substance.

The REG program may be used to plot on a line printer three types of regression analyses: A trend analysis with one station and one parameter; A correlation analysis with one station and two parameters; A correlation analysis on the value at one station versus those of another if two stations and one or two parameters are specified.

The following example uses stream station data because a ground-water station with sufficient data to run this program could not be located at this time. However, the same type of analysis can be performed for ground water where sufficient data points exist. For example if a user wanted to determine the relationship between temperature and oxygen concentration you would make the following retrieval request:



```
A—— PGM=REG,ARCLASS=ALL,              B
    A=112WRD,S=01463500,P=10,P=300,
D—— REGPARMS=                         C
E—— PLOT,S=01463500,P=1,P=2,
F—— STOPREG,
```

Key

A	REG program selected to perform a regression analysis generating a scatter diagram with a regression line as output.
B	Indicates that archieved stations are to be included in retrieval request.
C	Retrieve parametric data dissolved oxygen (P=300) and temperature degrees centigrade (P=10) requested at station 01463500 belonging to the U.S. Geological Survey.
D	Initiate the regression section of the retrieval request.
E	Initiates correlation and regression analysis of two quality parameters at the same site since 1 station and 2 parameters are specified.
F	Indicates end of regression section of retrieval.

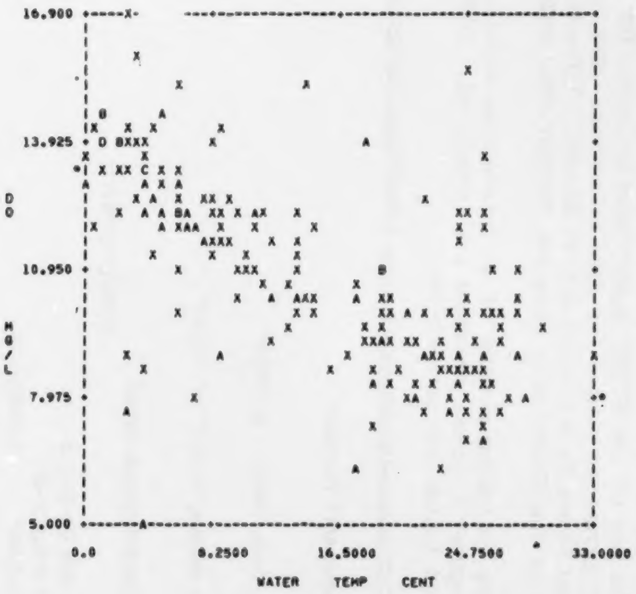
The output for this retrieval appears on the following page.

Exhibit 5-9

Example of The STORET Retrieval Program REG Which Scans Specific Stations or Data

```
STORET RETRIEVAL DATE 86/01/06 - REG MODULE

                        SUMMARY PAGE

 CORRELATION & REGRESSION ANALYSIS TWO QUALITY PARAMETERS SAME SITE.

   STATION: 01463500          DELAWARE RIVER AT TRENTON NJ
   LATITUDE & LONGITUDE: 40 13 18.0 074 46 42.0 2

   ABSCISSA PARAMETER:  00010       WATER      TEMP       CENT
   ORDINATE PARAMETER:  00300        DO                   MG/L




   REQUESTED
   ANALYSIS FROM: 1944/10    TO: 1985/ 7

   RECEIVED
   ANALYSIS FROM: 1944/10/10 TO: 1985/ 7/24




   REGRESSION LINE:    Y=    13.104 +    -0.15932X
   ORIGIN IS 0.0

   CORRELATION COEFFICIENT:       -0.64
   COEFFICIENT OF DETERMINATION:  0.40

         ********************************************
         *  STANDARD ERROR OF ESTIMATE:      1.76561 *
         *  STANDARD ERROR OF INTERCEPT:     0.22213 *
         *  STANDARD ERROR OF SLOPE:         0.01316 *
         *  T VALUE FOR INTERCEPT:          58.99019 *
         *  T VALUE FOR SLOPE:              12.14093 *
         ********************************************

   NUMBER OF SAMPLE POINTS:  218
```

STORET RETRIEVAL DATE 86/01/06 - REG MODULE



5.4.3 BROWSE

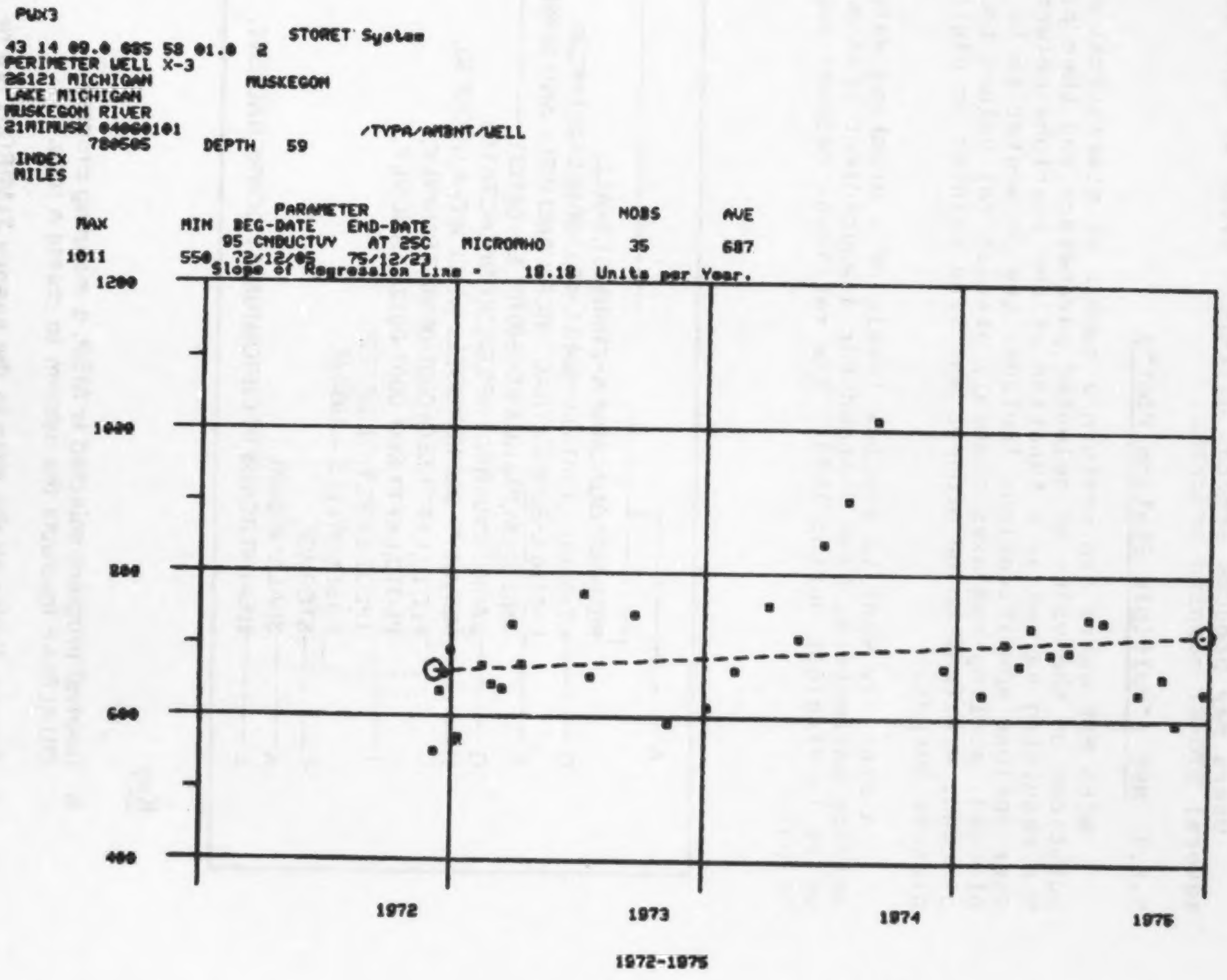
Browse is a interactive station retrieval program with optional graphic output. The program can be called by using the STORET command procedure %BROWSE. It creates an interface for you directly to the STORET database, through the use of the STORET agency-station code, for site selection, and the STORET parameter number for data selection. Many of the STORET data restriction keywords are valid within BROWSE. Information on %BROWSE is available in the STORET help data set "STORET.HELP.BROWSE".

In the following example of an interactive session the user's response to the computer's prompt messages are underlined. Additional clarification is enclosed inside the parentheses.

```
READY     (TSO Command Mode/Starting Point for STORET command %BROWSE)
%BROWSE
Is this a tektronix 4014 Terminal?
YES

Enter Agency Code, "SAME". or "STOP"
21MIMUSK

Enter Station Number, "FIRST" or "NEXT"
PWX3

GOT STATION 21M1MUSK  PWX3
                                        STORET  SYSTEM
43 14 09.0 085 58 01.0 2
PERIMETER WELL X-3
26121 MICHIGAN          MUSKEGON
LAKE MICHIGAN
MUSKEGON RIVER
21M1MUSK 0406010:                               /TYPA/AMBNT/WELL
        780505          DEPTH 59
INDEX
MILES
Inch and one quarter plastic well sampled monthly using either a centrifugal pump or compressed
air depending upon the depth to groundwater. Parameters include but are not limited to:
00080, 00095, 00340, 00680, 00940, 00671, 00631, 00310, 312501, and 31616.
   36 SAMPLE(S)
  284 OBSERVATIONS(S)
   10 PARAMETER(S)
PERIOD OF RECORD - 72/12/05  THROUGH  75/12/23
Enter PARM CODE,  "NEXT STATION", OR  "ALL"
95


PARAMETER
                              NOBS   AVE    MAX     MIN    BEG-DATE       END-DATE
95 CNDUCTVY AT 25C MICROMHO    35    687    1011    550    72/12/05       75/12/23
PLOT THIS PARAMETER  ?  (YES OR NO)
YES RESTRICTIONS

WHAT RESTRICTIONS

ENTER RESTRICTIONS OR "GO"
SYM =  -4, "GO"

  (The user specified with the "SYM" keyword that the plotting symbol represented by the number 4 (a square)
was to be used and by preceeding it with a minus sign indicated that no connecting lines between symbols were
to be drawn. The keyword "GO" tells the program to clear the screen and begin drawing the graph.
  After reviewing the graph the user would enter a carriage return to continue.)
ENTER PARM CODE,  "NEXT STATION:, or  "ALL"
STOP       (User entered stop to return to TSO)
READY      (TSO command mode prompt)
END OF DATA
```

Exhibit 5-10

Example of The STORET Retrieval Program BROWSE Which Plots a Statistical Representation of Changes in Concentration Over Time (PGM = REG, Trendplot)



```
 PUX3
                                    STORET System
43 14 09.0 085 58 01.0  2
PERIMETER WELL X-3
26121 MICHIGAN             MUSKEGON
LAKE MICHIGAN
MUSKEGON RIVER
21MIMUSK 04060101                        /TYPA/AMBNT/WELL
          780505       DEPTH   59
 INDEX
 MILES

                             PARAMETER                           NOBS        AVE
      MAX          MIN  BEG-DATE   END-DATE
                          95 CNDUCTVY   AT 25C   MICROMHO         35         687
     1011          550  72/12/05    75/12/23
                        Slope of Regression Line =    18.18  Units per Year.
```

5.5 Map Displays of Data

Users may produce several different types of maps using several STORET mapping programs.

5.5.1 MSP ("Multiple Station Plot")

With MSP users can perform a number of statistical computations on the value of selected parameters and then plot the resulting values as a function of the stations selected. User options specifications include: the parameter to be plotted, scaling and axes control, statistical values to be plotted, stations to be grouped and line printer or digital plotter output.

A user may want to see how levels of a drinking water suitability parameters, have changed for downgradient RCRA monitoring wells in Michigan during 1984. The retrieval request appears below:

```
A
                                                              B
       PGM=MSP,QUALMAP,A=21MIRG01,S=ALL,
C      LT=NORET,L=4130,L=8645,L=46,L=8645,L=46,L=8230,
E      L=4130,L=8230,EXTRACT=RCRA AND WELL AND DOWN   D
       AND 01034,P=01034,BD=840101,ED=841231,          F
G      BACKGRND=REACHES,BACKGRND=STATES,
H      MSPARMS=BEGIN,MODELL %TILE50T+A,GROUPSQ,
       PLOTC,LEFT1,SEG=0001-0006/ ,TRNDNLY,
I      PLOTC,LEFT1,SEG=0007-0012/ ,TRNDNLY,
       TPLOT,EARLY=1L,LATE2L,
       LABEL=WELLS – 1984#,
J      STOPMSP,
K      SCALE=250000,
L      HEAD=TRENDS IN CHROMIUM AT DOWNGRADIENT,
```

Key

A Retrival program selected is MSP, a mapping program. QUALMAP instructs the system to create a map.

B Agency Code; All the sites in the agency 21MIRG01 are requested (A=21MIRG01,S=ALL).

Key (continued)

C Site Restrictor, only data from sites falling within the boundaries defined by the sets of latitude/longitude coordinates are to be included (LT=NORET, L=..., etc; latitude/longitude boundaries are necessary for all mapping programs).

D Site Restrictor; only data from those sites which are downgradient RCRA monitoring wells that have at least one observation of chromium (EXTRACT=RCRA AND WELL AND DOWN AND 01034) are to be included.

E Parameter Code; P= 01034 is chromium in total water, report in mg/l.

F Data Restrictors; BD=Beginning Date and ED= Ending Date Retrieval and analysis are to be restricted to data collectged between January 1, 1984 and December 31, 1984.

G Output instruction; the outlines of the stream reaches and the state borders are to be overlaid on the map (BACKGRND=REACHES, BACKGRND=STATE).

H Specifications for Maps; These are flagged by MSPARMS=BEGIN,MODELL,

I Special MSP Keywords which are placed between the keywords: MSPARMS and STOPMSP" in this case the keywords indicate that the 50th percentile (median) of the data is to be calculated and that the percentile values are to be divided into 4 equal groups.

- The first "plot" is to calculated the 50th percentile of chromium values for the first six months of the year (SEG 0001-0006) but not to print the map of these values (TRNDNLY; the request not to print the map is optional, but it is not needed if only the trend map is wanted.
- The second "plot" is to calculate the 50th percentile of chromium values for the second six months of the year (SEG=0007-0012) but not print the map (TRNDNLY)
- The trend map is created by considering the values of the 50th percentile of chromium in the first of the above plots, the January-June plot, the one against which the second "plot", from July to December, is to be compared (TPLOT,EARLY=1L, LATE=2L)

Key (continued)

- **The trend map is to have a title on its legend reading "WELLS –1984"**

J **The mapping MSP specific keywords are finished (STOPMSP)**

K **Scale is used to specify the scaling factor for the map. The number represents the denominator of the scale to be used. If the key word "scale" is not used then by default map size becomes 30 x 60 inches.**

L **Head is used to add user-specified text lines to the lend of a map.**

An example of a trend map is printed on the next page.

Exhibit 5-11

EXAMPLE OF A MSP TREND MAP

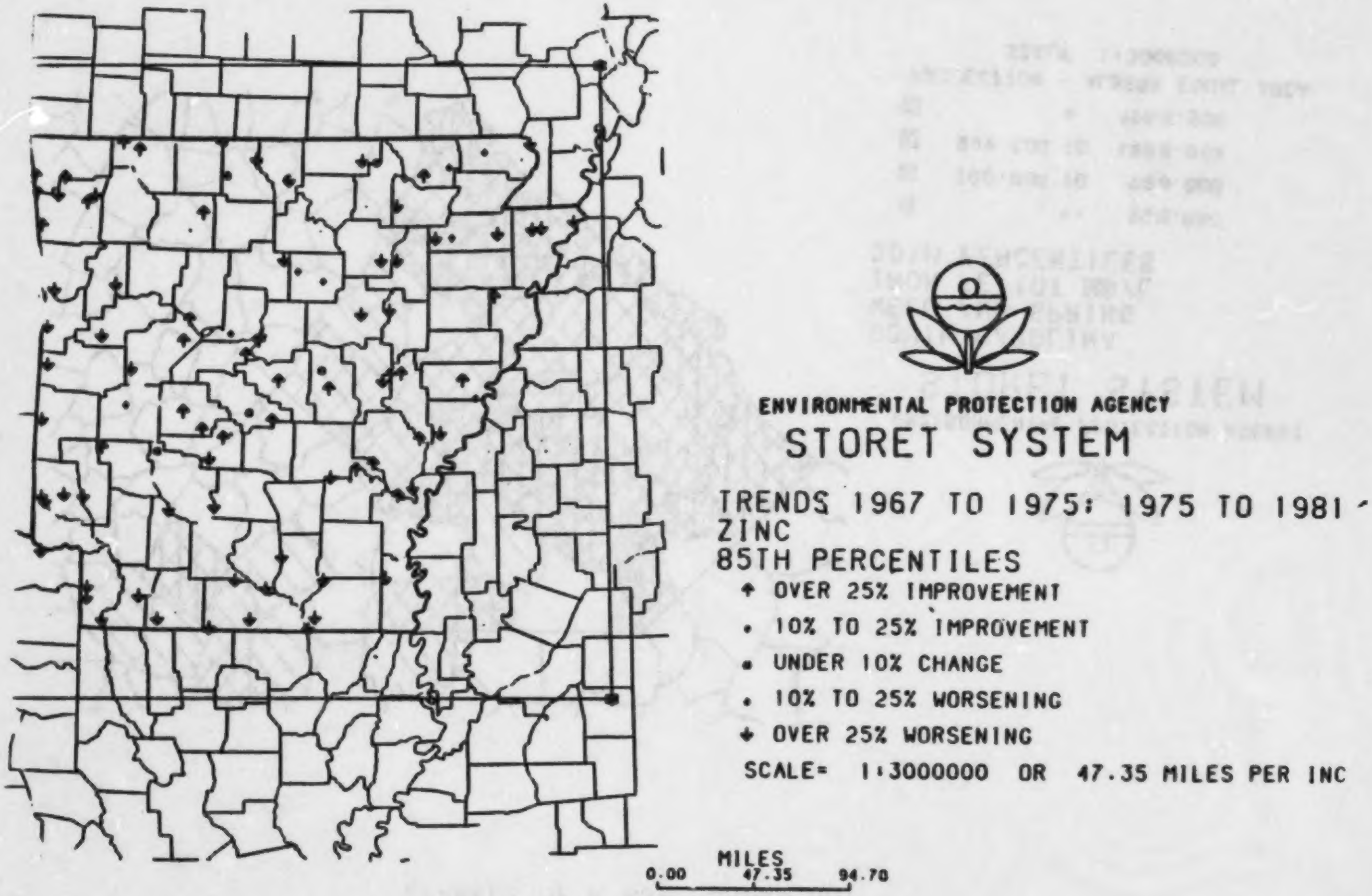
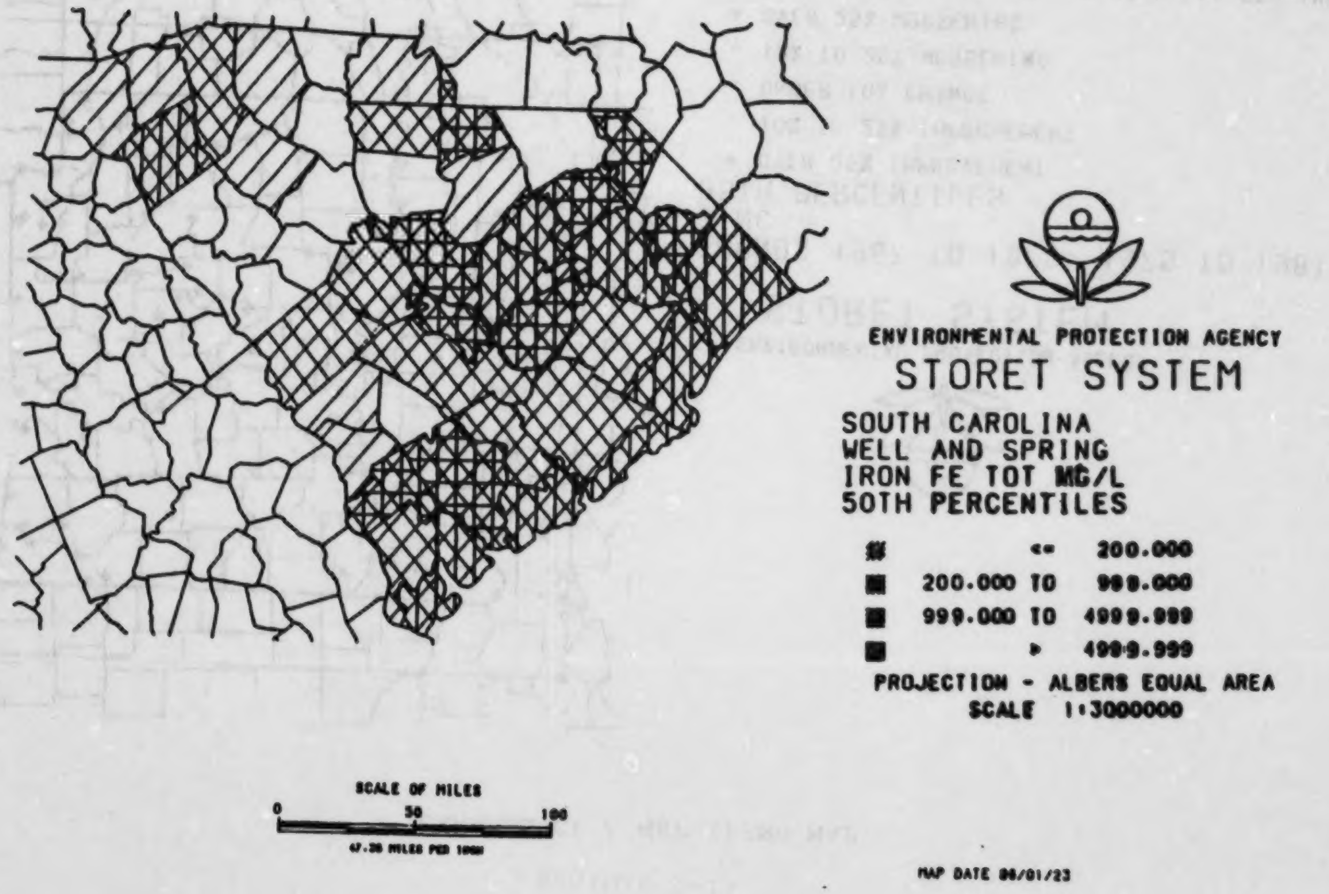

ENVIRONMENTAL PROTECTION AGENCY
STORET SYSTEM
TRENDS 1967 TO 1975; 1975 TO 1981
ZINC
85TH PERCENTILES
↑ OVER 25% IMPROVEMENT
• 10% TO 25% IMPROVEMENT
■ UNDER 10% CHANGE
• 10% TO 25% WORSENING
↓ OVER 25% WORSENING
SCALE= 1:3000000 OR 47.35 MILES PER INC
MILES
0.00
47.35
94.70

Exhibit 5-12

EXAMPLE OF A MSP SHADED MAP


ENVIRONMENTAL PROTECTION AGENCY
STORET SYSTEM
SOUTH CAROLINA
WELL AND SPRING
IRON FE TOT MG/L
50TH PERCENTILES
▨ <= 200.000
▨ 200.000 TO 999.000
▨ 999.000 TO 4999.999
▨ > 4999.999
PROJECTION - ALBERS EQUAL AREA
SCALE 1:3000000
SCALE OF MILES
0
50
100
47.35 MILES PER INCH
MAP DATE 86/01/23

5.5.2 LOC (LOCATION MAP)

The LOC program is utilized to generate a map of an area containing sampling site locations. Sampling sites to be shown are selected using any of the station selection methods.

To run a LOC program you would input:

```
A ——PGM=LOC,
B———STC=26,
C———LT=NORET,
D———┌L=4130,L=8645,L=4600,L=8645,
    └L=4600,L=8230,L=4130,L=8230,
E————ARCLASS=ALL,
F————EXTRACT=WELL,
G———┌HEAD=MONITORING WELLS,
    └HEAD=MICHIGAN,
H————BACKGRND=STATES,BACKGRND=COUNTIES,
I————NOPOLPLT,
J————SCALE=3000000,
K————CSIZE=0.07,
L————LOCSYM=02,SYMSIZE=0.01
M————TLAT=43.0,TLONG=081.3,
```

Key

A The LOC program plots a map of the area defined with any station selection method, and plots a symbol to denote the locations of all stations within that area.

B Select stations in Michigan.

C This keyword provides the LOC program with its required latitude/longitude polygon without using the polygon as a station selector.

D The L keyword is used to specify the vertices of a polygon. The vertices may be entered in a clockwise or counterclockwise direction.

E Allows retrieval of all achieved stations and their data that meet selection criteria.

F Restrict station selection to those that have a station type of "well".

Key (continued)

G This keyword is used to add user-specified text lines to the legend of the map.

H BACKGRND is used to speficy optional map background lines, either in addition to or instead of the default background of State and County boundaries.

I NOPOLPLT may be used with the LOC program (when the area whose stations are to be plotted is defined by a polygon to suppress mapping of the polygon).

J Scale specifies the desired scale for the map to be plotted.

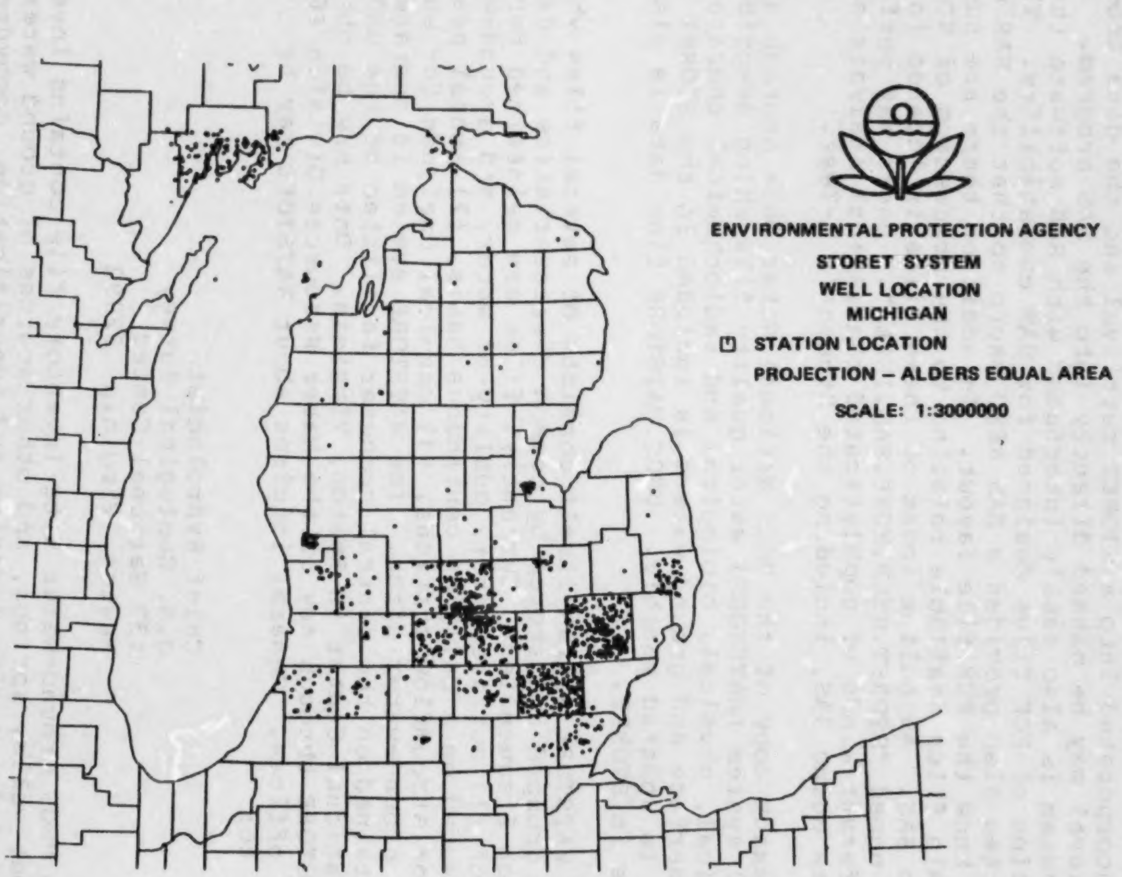
K CSIZE is used to change the size of the characters in the map legend, and thus the size of the legend itself. CSIZE is a mutiple of .15 inches with a valid range of .03 – 1.0.

L LOCSYM and SYMSIZE are used to specify, respectively the symbol to be drawn to denote station locations (in this case a triangle) and the height of the symbols plotted in inches (from 1.0 to 0.01).

M TLAT and TLONG are used to move the legend to a user specified place on the map.

Exhibit 5-13

Example of the STORET Retrieval Program LOC Which Generates a Map
Showing the Location of Sampling Sites


ENVIRONMENTAL PROTECTION AGENCY
STORET SYSTEM
WELL LOCATION
MICHIGAN
☐ STATION LOCATION
PROJECTION – ALDERS EQUAL AREA
SCALE: 1:3000000
SCALE OF MILES
0
50
100
EPA/STORET SYSTEM
MAP DATE

5.6 Interfaces with Other Important Data Analysis Systems

The output data from a STORET retrieval may be placed on computer tapes or computer disk packs. These output files called Further Computational Files (FCF) can be used as input to user-supplied computer programs or a commercial statistical package. One software system that will be of great interest to Ground-Water Users will be the Statistical Analysis System (SAS). A SAS program may be incorporated into a STORET retrieval and the data from the retrieval may be passed directly into the SAS program. The STORET system is also easily interfaced with SAS software through the creation of FCF files designed for SAS compatibility. The STORET sytem also provides a SAS READ macro so that the SAS user need not know the FCF file layout. In addition there are numerous STORET help files available relating to the processing of STORET data with SAS. An online index of these files is located in the data set named "STORET.HELP.MORE.SAS.INDEX". Users may perform many different kinds of sophisticated statistical analysis on their data using SAS, including the Student's T-Test.

An exact copy of the USGS National Water Data Storage and Retrieval system (WATSTORE) water quality file which describes the chemical, physical, biological and radiochemical charateristics of both surface and ground waters is included in the STORET data base and is updated monthly. USGS WATSTORE flow data is also available in STORET.

The WATSTORE system itself consists of several files which data are grouped and stored by common characteristics and data collection frequencies. Currently, files are maintained for the storage of (1) surface-water, quality-of-water, and ground-water data measured on a daily or continuous basis, (2) annual peak values for streamflow stations, (3) chemical analyses for surface and ground-water sites. The WATSTORE system is operated and maintained on the central computer facilities of the USGS at its National Center in Reston, Virginia. Data may be obtained from WATSTORE through any of the Water Resources Division 46 District offices. General inquires about WATSTORE may be directed to:

Chief Hydrologist
U.S. Geological Survey
437 National Center
Reston, Virginia 22092

The USGS Ground-Water Site Inventory file contains inventory data about wells, springs, and other sources of ground water. The data included are site location and identification, geohydrologic characteristics, well-construction history, and one-time field measurements such as water temperature. Exhibit 5-14 is an example of the form used by the USGS to input data into the GWSI system and presents a comprehensive view of the information the file contains. The file contains over 1 million records and will eventually contain over 2 million records. A copy of this file was placed on EPA's National Computer Center System 2000 Data Base. It may be made available with three days notice by contacting the Office of Ground-Water Protection (202/382-7077).

EXHIBIT 5–14

FORM NO 9-1904– A

SITE NO. ____________________

U.S. DEPT. OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
GROUND WATER SITE INVENTORY
SITE SCHEDULE

Recorded by ____________________

Date ____________________

GENERAL SITE DATA (0)

Check One ____ English ____ Metric Units

Site Ident No [5 … 19]

RG Number R = 0 *

Transaction T = A D M V * (add, delete, modify, verified)

Site-Type 2 = C D H I M P T W * (collector, drain, sinkhole, connector, multiple well, pond, tunnel or shaft, well)

Data Reliability 3 = C U L M * (field checked, unchecked, location not accurate, minimal data)

Reporting Agency 4 = *

Project No. 5 = *

District 6 = *

State 7 = *

County (or town) ____________ 8 = *

Latitude 9 = * (deg min sec)

Longitude 10 = * (deg min sec)

Lat-Long Accuracy 11 = S F T M * (sec, 5 sec, 10 sec, Min)

Local Number 12 = *

Land Net Loc. 13 = S T R * (1/4 1/4 1/4 section, township, range, merid)

Location Map 14 = *

Scale 15 = *

Altitude 16 = *

Method of Measurement 17 = A L M * (altimeter, level, map)

Accuracy 18 = *

Topo Setting 19 = D C E F H K L 0 P S T U V W * (depression, stream channel, dunes, flat, hilltop, sink, swamp, offshore, pediment, hillside, terrace, undulating, valley flat, upland draw)

Hydrologic Unit (OWDC) 20 = *

Date of First Construction/ Completion 21 = / / * (month day year)

Use of Site 23 = A D E G H 0 M P R S T U W X Z * (anode, drain, geothermal, seismic, heat reserv, observation, mine, oil or gas, recharge, repress, test, unused, withdrawal, waste, destroyed)

Use of Water 24 = A B C D E F H I M N P R S T U Y Z * (air cond., bottling, commercial, dewater, power, fire, domestic, irrigation, medicinal, industrial, public supply, recreation, stock, institution, unused, desal, other)

Secondary Water Use 25 = *

Tertiary Use of Water 26 = *

Depth of Hole 27 = *

Depth of Well 28 = *

Source of Depth Data ① 29 = *

Water Level 30 = *

Date Measured 31 = / / * (month day year)

Source ① 33 = *

Method of Measurement 34 = A C E G H L M R S T V Z * (airline, calibrated airline, estimated, pressure gage, calibrated pressure gage, geophysical logs, manometer, reported, steel tape, electric tape, calibrated electric tape, other)

Site Status 37 = D F G H 0 P R S T V X Z * (dry, flowing, nearby flowing, nearby recently flowing, obstruction, pumping, recently pumped, nearby pumping, nearby recently pumped, foreign substance, surface water effects, other)

Source of Geohydrologic Data ① 36 = *

Pump Used 35 = * (no)

Measuring Point 266 = *

Measuring Point Date 267 = / / * (month day year)

OWNER IDENTIFICATION (1)

R = 158 *

T = A D M * (add, delete, modify)

Date of Ownership 159 # / / * (month day year)

Name: Last 161 = *

First 162 = *

Middle Initial 163 = *

OTHER SITE IDENTIFICATION NUMBERS (1)

R = 189 *

T = A D M * (add, delete, modify)

New Card Same R & T

Ident 190 # *

Assigner 191 = *

Ident 190 # *

Assigner 191 = *

SITE VISIT DATA (1)

R = 186 *

T = A D M * (add, delete, modify)

Date of Visit 187 # / / * (month day year)

Name of Person 188 = *

FIELD WATER QUALITY MEASUREMENTS (1)

R = 192 *

T = A D M * (add, delete, modify)

New Card Same R thru 195

Date 193 # / / * (month day year)

Geohydrologic Unit 195 # *

Temperature 196 # 0 0 0 1 0 *

Degrees C 197 = *

Conductance 196 # 0 0 0 9 5 *

µ Mhos 197 = *

Other (STORET) Parameter 196 # *

Value 197 = *

Other (STORET) Parameter 196 # *

Value 197 = *

FOOT NOTES:

① Source of Data Codes:

S D 0 A R L G Z (reporting agency, driller, owner, other gov't, other reported, logs, geologist, other)

Reproduced from best available copy.

EXHIBIT 5–14 (Continued)

WELL CONSTRUCTION DATA (1)

R = 58 * | T = A D M * (add, delete, modify) | Entry No 59 # * | Date of Construction Completion 60 = / / * (month, day, year) | Source of ① Const. Data 64 *

Name of Contractor/Driller 63 = *

Method of Construction 65 = *

A	B	C	D	H	J	P	R	T	V	W	Z
air rotary	bored, or augered	cable-tool	dug,	hydraulic, rotary	jetted,	air percussion	reverse, rotary	trenching,	driven,	drive, wash	other

Finish 66 = *

C	F	G	H	0	P	S	T	W	X	Z
porous, concrete	gravel w. perf	gravel, screen	horizontal, gallery,	open, end	perforated, or slotted	screen,	sand point,	walled,	open, hole	other

Type of Seal 67 = *

B	C	G	Z
bentonite,	clay,	cement, grout	other

Bottom of Seal 68 = *

Method of Development 69 = *

A	B	C	J	N	P	S	Z
air lift, pump	bailed,	compressed, air	jetted,	none,	other, pump	surged,	other

Number of Hours in Development 70 = *

Special Treatment During Development 71 = *

C	D	E	F	H	M	Z
chemicals,	dry ice,	explosives,	deflocculent,	hydrofracturing,	mechanical,	other

DIMENSIONS OF THE HOLE CONSTRUCTED (2)

R = 72 * | T = A D M * (add, delete, modify) | Construction Entry No 59 # *

New Card for Each Hole Segment Same R, T & Field 59

Top of Hole Segment Below LSD	Bottom of Hole Segment below LSD	Diameter of Hole Segment
73 # . *	74 = . *	75 = . *
73 # . *	74 = . *	75 = . *
73 # . *	74 = . *	75 = . *
73 # . *	74 = . *	75 = . *
73 # . *	74 = . *	75 = . *

CASING SCHEDULE (2)

R = 76 * | T = A D M * (add, delete, modify) | Construction Entry No 59 # *

New Card for Each Casing With Same R, T & Field 59

Top of Casing Segment Below LSD	Bottom of Casing Segment Below LSD	Diameter of Casing Segment	Casing Material 5	Thickness of Casing
77 # . *	78 = . *	79 # . *	80 = *	81 = . *
77 # . *	78 = . *	79 # . *	80 = *	81 = . *
77 # . *	78 = . *	79 # . *	80 = *	81 = . *
77 # . *	78 = . *	79 # . *	80 = *	81 = . *
77 # . *	78 = . *	79 # . *	80 = *	81 = . *

OPENINGS SCHEDULE (2)

R = 82 * | T = A D M * (add, delete, modify) | Construction Entry No 59 # *

New Card for Each Open Section With Same R, T and Field 59

	(Openings Data)	(Openings Data)	(Openings Data)
Top of Section Below LSD	83 # . *	83 # . *	83 # . *
Bottom of Section Below LSD	84 = . *	84 = . *	84 = . *
Type of Openings 6	85 = *	85 = *	85 = *
Type of Material 7	86 = *	86 = *	86 = *
Diameter of Open Section	87 = . *	87 = . *	87 = . *
Width of Opening	88 = . *	88 = . *	88 = . *
Length of Opening	89 = . *	89 = . *	89 = . *

FOOT NOTES:

① Source of Data Codes:

S	D	0	A	R	L	G	Z
reporting, agency	driller,	owner,	other gov't,	other reported,	logs,	geologist,	other

5 Casing Material Codes

B	C	G	I	M	P	R	S	T	U	W	Z
brick,	concrete,	galv. iron	wrought, iron	other, metal	PVC or, plastic	rock or, stone	steel,	tile,	coated, steel	wood,	other

6 Type of Openings Codes

F	L	M	P	R	S	T	W	X	Z
fracture,	louvered, shuttered	mesh,	perforated, or slotted	wire-wound	screen, (unknown)	sand, point	walled,	open, hole	other

7 Type of Material Codes for Open Sections

B	C	G	I	M	P	R	S	T	Z
brass or, bronze	concrete,	galv. iron	wrought, iron	other, metal	PVC or, plastic	stainless, steel	steel,	tile,	other

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EXHIBIT 5–14 (Continued)

PRODUCTION DATA (1)

R = 134 14C * (flowing, pumped)
T = A D M * (add, delete, modify)
Entry No 147 # *
Date 148 = __ / __ / ____ * (month day year)
Discharge: 150 = *
Source of Data ① 151 = *

Method of Measurement 152 = B C E F M O P R T U V W Z *

B	C	E	F	M	O	P	R	T	U	V	W	Z
bailer,	current meter,	estimated,	flume,	totaling meter,	orifice,	pitot-tube meter,	reported,	trajectory,	venturi,	volumetric,	weir,	other

Production Level 153 = *
Static Level 154 = *
Source ① of Data 155 = *
Specific Capacity 272 = *

Method of Measurement 156 = A C E G H L M R S T V Z *
Pumping Period 157 = *

A	C	E	G	H	L	M	R	S	T	V	Z
airline,	calibrated airline,	estimated,	pressure gage	calibrated pressure gage	geophysical logs,	manometer,	reported,	steel tape,	electric tape	calibrated electric tape,	other

LIFT DATA (1)

R = 42 *
T = A D M * (add, delete, modify)
Type of Lift 43 # A B C J P R S T U Z *
Entry No 254 # *

A	B	C	J	P	R	S	T	U	Z
air,	bucket,	centrifugal,	jet,	piston,	rotary,	submergible,	turbine,	unknown,	other

Pump Intake Setting 44 = *
Type of Power 45 = D E G H L N W Z *

D	E	G	H	L	N	W	Z
diesel,	electric,	gasoline,	hand,	LP gas,	natural gas,	windmill,	other

Date 38 = __ / __ / ____ * (month day year)
Horsepower 46 = *

MAJOR PUMP DATA (2)

R = 47 *
T = A D M * (add, delete, modify)
Type of Lift 43# *
Lift Entry No 254 # *
Manufacturer of Pump 48 = *
Serial No of Pump 49 = *
Name of Power Company 50 = *
Power Company Account No 51 = *
Power Meter No 52 = *
Pump Rating 53 = *
Person or Company Who Maintains the Pump 54 = *
Additional Lift 256 = *
Rated Pump Capacity 268 = *

STANDBY POWER DATA (2)

(See LIFT DATA for codes of fields 43 and 56 below)

R = 55 *
T = A D M * (add, delete, modify)
Type of Lift 43# *
Type of Power 56 = *
Horsepower 57 = *
Lift Entry No 254 # *

AVAILABLE LOG DATA (1)

R = 198 *
T = A D M * (add, delete, modify)

New Card for Each Log Type Same R & T

Type of Log②	Begin Depth	End Depth	Source of Data①
199 # *	200 = *	201 = *	202 = *
199 # *	200 = *	201 = *	202 = *
199 # *	200 = *	201 = *	202 = *
199 # *	200 = *	201 = *	202 = *

WATER QUALITY DATA COLLECTION (1)

R = 114 *
T = A D M * (add, delete, modify)
Begin Year 115 # *
End Year 116 = *
Source Agency 117 = *
Frequency of Collection 3 118 = *
Network Site 257 = *
Type of Analyses 4 120 = *

WATER LEVEL DATA COLLECTION (1)

R = 121 *
T = A D M * (add, delete, modify)
Begin Year 122 # *
End Year 123 = *
Source Agency 124 = *
Frequency of Collection ③ 125 = *
Network Site 258 = *

WATER PUMPAGE/WITHDRAWAL DATA COLLECTION (1)

R = 127 *
T = A D M * (add, delete, modify)
Begin Year 128 # *
End Year 129 = *
Source Agency 130 = *
Frequency of Collection ③ 131 = *
Network Site 259 = *
Method of Collection 133 = C E M U Z *

C	E	M	U	Z
calculated,	estimated,	metered,	unknown,	other

OTHER DATA AVAILABLE (1)

R = 180 *
T = A D M * (add, delete, modify)
Type of Data 181 # *
Loc 182 = C D Z * (cooperator, district, other)
Format 261 = F M P Z * (files, machine readable, published, other)

New Card Same R & T

Type of Data 181 # *
Loc 182 = C D Z *
Format 261 = F M P Z *

FOOT NOTES:

① Source of Data Codes:

S	D	Ø	A	R	L	G	Z
reporting agency,	driller,	owner,	other-gov't,	other reported,	logs,	geologist,	other

③ Frequency of Collection Codes

A	B	C	D	F	I	M	Ø	Q	S	W	Z
annual,	bi-monthly,	continuous,	daily,	semi monthly,	intermittent,	monthly,	one time only,	quarter annual,	semi-annual,	weekly,	other

② Type of Log Codes

A	B	C	D	E	F	G	H	I	J	K	L	M	N	Ø	P	Q
time,	collar,	caliper,	driller's,	electric,	fluid conduct,	geologist,	magnetic,	induction,	gamma ray,	dipmeter,	laterlog,	microlog,	neutron,	μ later,	photo,	radio-active

S	T	U	V	Z
sonic,	temp,	gamma-gamma,	fluid velocity,	other

④ Type of Quality Analyses Codes

A	B	C	D	E	F	G	H	J	K	L	M	Z
physical,	common chemical,	trace elements,	pesticides,	nutrients,	sanitary,	codes B&D	codes B&E	codes B&F	codes D&E	codes C,D&E	all or most	other

EXHIBIT 5–14 (Continued)

GEOHYDROLOGIC UNIT DESCRIPTIONS (1)

R = 90 * T = A D M * (add, delete, modify)

Entry No 256 # *

Depth to Top 91 = . *

Depth to Bottom 92 = . *

Unit Identifier 93 = *

Lithology 96 = *

Lithologic Modifier 97 = *

AQUIFER DATA (2)

R = 94 * T = A D M * (add, delete, modify)

Geohydrologic Unit Entry No 256 # *

Date 95 # / / * (month day year)

Water Level 126 = . *

% Water Contributed 132 = *

GEOHYDROLOGIC UNIT DESCRIPTIONS (1)

R = 90 * T = A D M * (add, delete, modify)

Entry No 256 # *

Depth to Top 91 = . *

Depth to Bottom 92 = . *

Unit Identifier 93 = *

Lithology 96 = *

Lithologic Modifier 97 = *

AQUIFER DATA (2)

R = 94 * T = A D M * (add, delete, modify)

Geohydrologic Unit Entry No 256 # *

Date 95 # / / * (month day year)

Water Level 126 = . *

% Water Contributed 132 = *

PERTINENT REMARKS

R = 183 * T = A * (add)

185 = ` ' *

185 = ` ' *

185 = ` ' *

New Card Same R&T

NOTES:

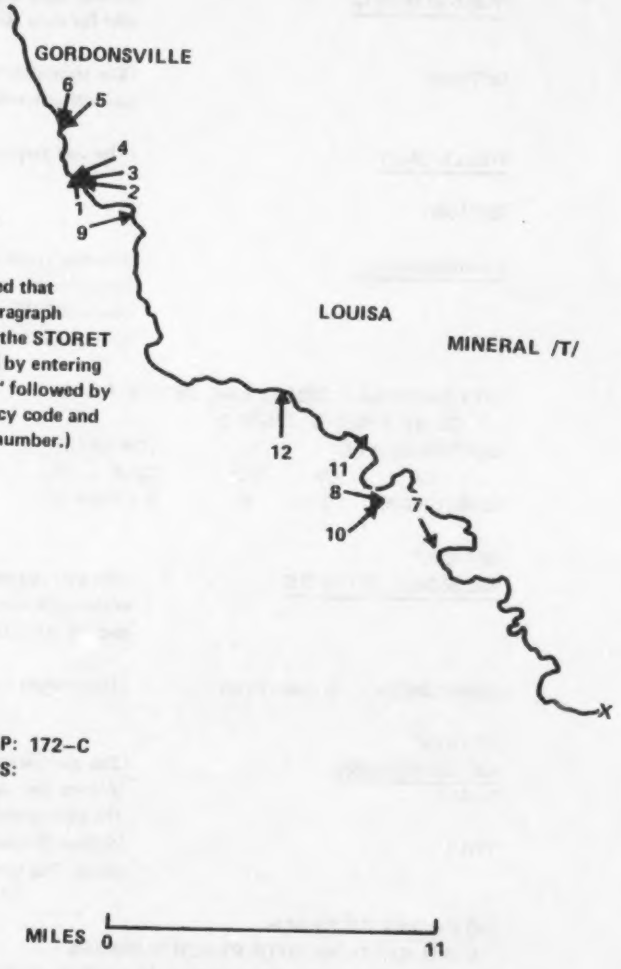
The Water Quality Analysis Branch (WQAB) maintains both conversational and batch software at the Environmental Protection Agency's National Computer Center. The WQAB conversational procedures provide access to eight environmental data bases and may be used with graphic or non-graphic terminals. Two of the many WQAB conversational procedures available are "SITEHELP" and "PARM." In the following examples all user entered lines are followed by a carriage return and are underlined for identification. Explanatory comments are enclosed in parentheses.

In this example "SITEHELP" is used to find and access groundwater monitoring stations by city name.

```
WQAB SITEHELP                       (Allows access to the conversational procedure and prompts
                                    user for data about terminal type and tso session.)

OPTION?                             (The computer's prompt message when the WQAB conver-
                                    sational procedure is waiting for user input.)

WELLS ONLY                          (The user requested that stations are to be wells only)

OPTION?

c gordonsville va                   (the user requested that Gordonsville Virginia be located.
                                    The systems response provides the Lat/Long, Major/Minor
                                    Basins (0215), Congressional District (CD07), Orange County,
                                    1970 population (1253), and is near the North Anna river).

CITY 36840  LAT 380830  LNG 781118  FLAG * MJMN 215 SBC ? SMSA -1 SD
  ? CD 07 FPS70 3 CPS70 2
GORDONSVILLE                            ORANGE
    C60        1109       C70       1253      C80     -1
02080106026       0.00      N       N ANNA  R

OPTION?
find 380830  78118  0.5            (the user requested that the system find the steam(s) that are
                                   within 0.5 miles of Gordonsville, Virginia Lat/Long (38  08'  30",
                                   and 78  11'  18").)

02080106026      S Anna River      (The system found reach number 02080106026 of the S Anna River)

OPTION?
rch 02080106026                    (The user requested data on the South Anna River.)
SCALE?                             (Allows user with graphic terminal to adjust scale of graphic displays.
                                   The user entered a carriage return.)
TOL?                               (Allows the user with a graphic terminal to adjust tolerance on river
                                   traces. The user entered a carriage return.)

NO DRINKS ON REACH
  0 WQ  STATIONS WITH REACH NUMBERS
PRESENT COORDINATE LIMITS FOR WATER QUALITY RETRIEVAL:
      LATMAX  38 11 36.8      LATMIN  37 47 42.9
      LONMAX  78 13 20.6      LONMIN  77 50 42.7
ENTER KEYWORD AND NEW VALUE OR RETURN (The user enters a carriage return)

AT LEAST 300 WQ STATIONS IN WINDOW   (The system indicates that there are 300 wells for
                                     the requested area.)

OPTION?

co n1  (The user requested data on the first 12 wells.  See next page)
```

```
S ANNA R
02080106036(4) LEN 48.90 LR 1.00
TYPE S LEVEL 2 TRNS
DOWNSTREAM: 02080106034 COMPLEMENT: 020801060035
UPLEFT: -        UPRIGHT: -
DATE 860206      TIME 172756
CIBG036N1
MONITORING STATIONS
   1   21VASWCB   154-00202   LOUISA
   2   21VASWCB   154-00203   LOUISA
   3   21VASWCB   154-00204   LOUISA
   4   21VASWCB   154-00205   LOUISA
   5   21VASWCB   168-00065   TOWN OF GORDONSVILLE
   6   21VASWCB   154-00150   GORDONSVILLE
   7   21VASWCB   168-00115   T A GOODALL
   8   21VASWCB   154-00460   GORDONSVILLE
   9   21VASWCB   154-00463   GORDONSVILLE
  10   21VASWCB   154-00229   LOUISA
  11   21VASWCB   154-00211   YANCEYVILLE
  12   21VASWCB   154-00153   VIRGINIA VERMICULITE #1
```

(The data on the first 12 wells is printed and a map of the S Ann River reach is drawn with station location indicated.)



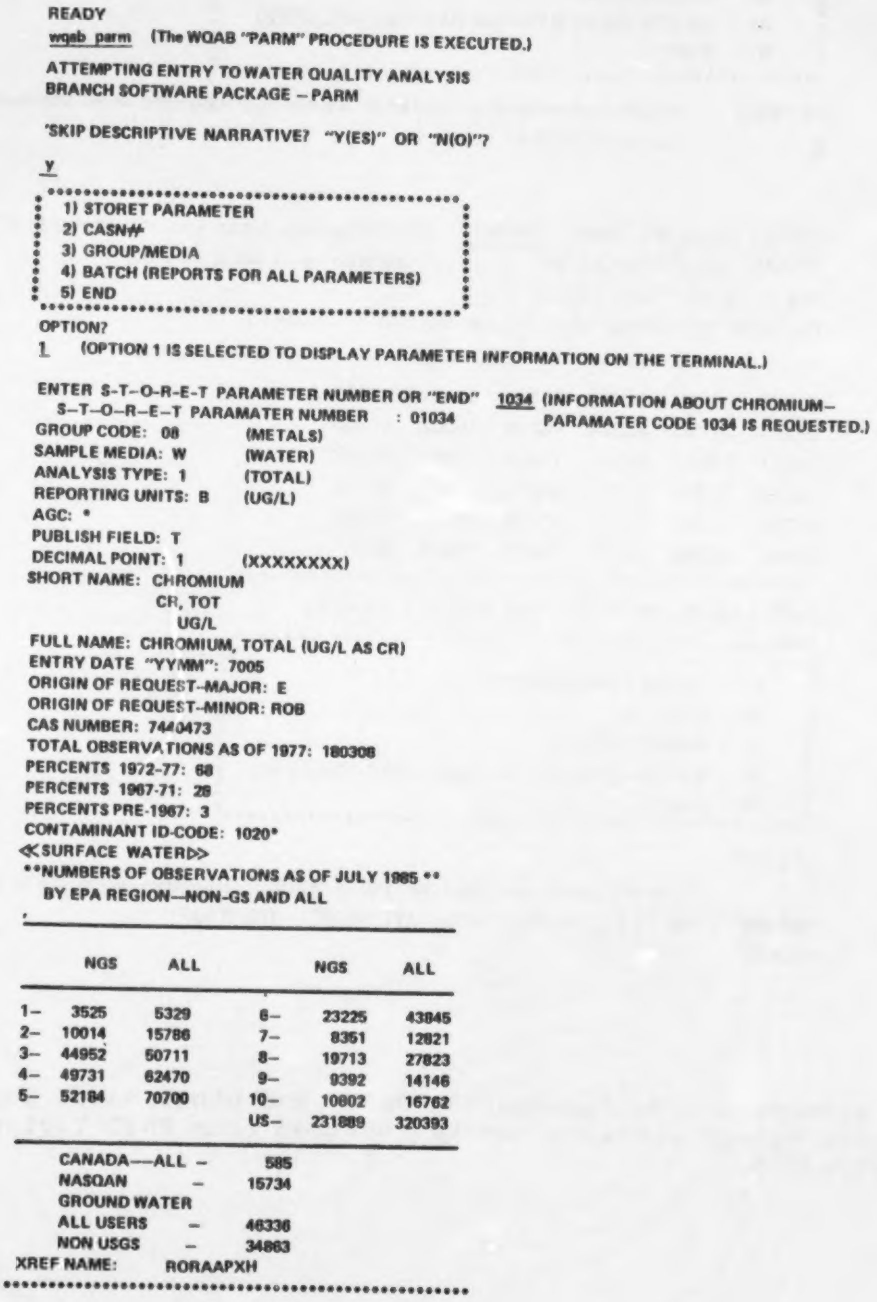
```
OPTION?

M 21VASWCB 154-00460
21VASWCB 154-00460
38062100781111104
02-NORTH ATLANTIC
15-RAPPAHANOCK/YORK/COAST
GORDONSVILLE
VIRGINIA
51109
021500
060104
        9999  :     :     :
/TYPE/AMENT/WELL
LOUISA
02080106

OWNERS NAME: ROBERT E. NORTON #1
DRILLER: CLAYTON
DATE COMPLETED: 1981          TYPE RIG: ARO        TOPO MAP: 172-C
PROVINCE: 2                   TYPE LOGS:           CUTTINGS:
WATER ANALYSIS: YES           AQUIFER TEST:
TYPE FACILITY: FARM
ABANDONED:

OPTION?
```

(The user requested that the description paragraph information from the STORET WQF be displayed by entering the command "M" followed by the STORET agency code and STORET Station number.)

```
ITAKE DEPTH: 0030
```

5

In this example "PARM" is used to access the STORET Water Quality File (WQF) parameter file by parameter code. The output is a complete description of all monitoring data available for the specified parameter. As indicated in the example "PARM" can be used to identify the CAS number which corresponds with the STORET parameter codes.



```
READY
wqab parm   (The WQAB "PARM" PROCEDURE IS EXECUTED.)

ATTEMPTING ENTRY TO WATER QUALITY ANALYSIS
BRANCH SOFTWARE PACKAGE – PARM

'SKIP DESCRIPTIVE NARRATIVE?  "Y(ES)" OR "N(O)"?

y
*****************************************
*  1) STORET PARAMETER                  *
*  2) CASN##                            *
*  3) GROUP/MEDIA                       *
*  4) BATCH (REPORTS FOR ALL PARAMETERS)*
*  5) END                               *
*****************************************
OPTION?
1    (OPTION 1 IS SELECTED TO DISPLAY PARAMETER INFORMATION ON THE TERMINAL.)

ENTER S-T-O-R-E-T PARAMETER NUMBER OR "END"  1034 (INFORMATION ABOUT CHROMIUM–
   S–T–O–R–E–T PARAMATER NUMBER    : 01034        PARAMATER CODE 1034 IS REQUESTED.)
GROUP CODE:  08          (METALS)
SAMPLE MEDIA:  W         (WATER)
ANALYSIS TYPE:  1        (TOTAL)
REPORTING UNITS:  B      (UG/L)
AGC:  *
PUBLISH FIELD:  T
DECIMAL POINT:  1         (XXXXXXXX)
SHORT NAME:  CHROMIUM
             CR, TOT
               UG/L
FULL NAME:  CHROMIUM, TOTAL (UG/L AS CR)
ENTRY DATE  "YYMM":  7005
ORIGIN OF REQUEST-MAJOR:  E
ORIGIN OF REQUEST-MINOR:  ROB
CAS NUMBER:  7440473
TOTAL OBSERVATIONS AS OF 1977:  180308
PERCENTS  1972-77:  68
PERCENTS  1967-71:  28
PERCENTS PRE-1967:  3
CONTAMINANT ID-CODE:  1020*
<<SURFACE  WATER>>
**NUMBERS OF OBSERVATIONS AS OF JULY 1985 **
  BY EPA REGION---NON-GS AND ALL
____________________________________________________

       NGS     ALL              NGS      ALL
____________________________________________________

1–     3525     5329      6–    23225    43845
2–    10014    15786      7–     8351    12821
3–    44952    50711      8–    19713    27823
4–    49731    62470      9–     9392    14146
5–    52184    70700     10–    10802    16762
                         US–   231889   320393
____________________________________________________
    CANADA---ALL  –       585
    NASQAN        –     15734
    GROUND WATER
    ALL USERS     –     46336
    NON USGS      –     34863
XREF NAME:        RORAAPXH
****************************************************
```

```
ENTER S-T-O-R-E-T PARAMETER NUMBER OR "END"  end  (Option 1 is ended.)
*******************************************************
*     1)    STORET PARAMETER                          *
*     2)    CASN #                                    *
*     3)    GROUP/MEDIA                               *
*     4)    BATCH (REPORTS FOR ALL PARAMETERS)        *
*     5)    END                                       *
*******************************************************
OPTION?       (Option 2 is selected to display on the terminal parameter codes associated with
2              user provided CAS numbers.)


ENTER CASN, OR "END"  7440473   (The CAS number is entered and associated STORET
TOTAL OCCURRENCES  36             parameter codes are displayed.)
LIST?  "Y(ES)"  OR  "N(O)"   y
PARAMETER NUMBERS CONTAINING CAS #  7440473
.......................................................................
01024   01029   01030   01031   01034   01118
01254   01255   46244   46271   46308   46560
61511   61512   61513   71939   71943   71947
78413   79735   81215   81217   81729   81736
81745   81773   81781   81789   81796   82058
82059   82399   82498   82499   82500   85007
*******************************************************
ENTER CASN, OR "END"  end  (Option 2 is ended.)
*******************************************************
*     1)    STORET PARAMETER                          *
*     2)    CASN #                                    *
*     3)    GROUP/MEDIA                               *
*     4)    BATCH (REPORTS FOR ALL PARAMETERS)        *
*     5)    END                                       *
*******************************************************
OPTION?
5             (Option 5 is selected to end the WQAB "PARM" procedure and return to TSO.)
"PARM"  COMPLETED---(02/19/86)---(11:16:38)---(MLGA021)
READY
```

Information on "SITEHELP" "PARM" and other Water Quality Analysis Branch software can be obtained from Phil Taylor 202/382-7046.

APPENDIX A

Graphic Illustration of Where to Place Descriptors in the STORET Data Record

APPENDIX A-I

Station Descriptor Locations in the STORET Data Base For Ground-Water/STORET Users

Descriptor Type-Facility Subcategories	Station Header	Descriptive Paragraph	Parametric Data	
			Fixed-date	Variable date
Facility name	X			
Type of waste management area (landfill, etc)	X			
RCRA-regulating agency		X		
Facility Dun & Bradstreet number	X			
State/county codes and names	X			
Major/minor/sub-basin codes and names	X			
Hydrologic unit (USGS)	X			
Facility type ** (treater, storer, etc)	X			
Other permits held by facility		X		
Permit status		X		
Ownership of facility **	X	X	X	
Legislation of concern **	X	X		
Facility history		X		

---

* -- Numbers in parentheses are STORET parameter codes

** -- Information may fall into several categories and/or be stored in several locations

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APPENDIX A-I (continued)

Station Descriptor Locations in the STORET Data Base For Ground-Water/STORET Users

Descriptor Type-Facility Subcategories	Station Header	Descriptive Paragraph	Parametric Data	
			Fixed-date	Variable date
Land use		X		
Potential targets, nearby sensative ecosystems		X		
Contacts for further information **	X	X		
Total well field description		X		
Other monitoring activities		X		

---

* — Numbers in parentheses are STORET parameter codes

** — Information may fall into several categories and/or be stored in several locations

APPENDIX A-I (continued)

Station Descriptor Locations in the STORET Data Base
For Ground-Water/STORET Users

Descriptor Type-Well Subcategories	Station Header	Descriptive Paragraph	Parametric Data	
			Fixed-date	Variable date
Latitude/longitude	X			
Well "position" relative to waste management area	X	X		
Purpose of well (84061)	X		X	
Type of monitoring (RCRA, etc.)	X			
Drilling method (84063)			X	
Screened interval (82509)			X	
Depth of hole (72001)			X	
Depth of well (72008)			X	
Well intake finish (84113)			X	
Well casing material (84114)			X	
Type of material from which opening is made (84115)			X	

---

* — Numbers in parentheses are STORET parameter codes

APPENDIX A-I (continued)

Station Descriptor Locations in the STORET Data Base
For Ground-Water/STORET Users

Descriptor type-Physical setting Subcategories	Station Header	Descriptive Paragraph	Parametric Data	
			Fixed-date	Variable date
Proximity and position relative to drinking water sources		X		
Lithologic modifier			X	
Source of geohydrologic data (84112)			X	
Topography (84060)			X	
Geologic age or formation name (84000)			X	
Aquifer name (84001)			X	
Lithology		X		
Aquifer thickness	X			
Depth to top of lithologic unit (73661)			X	
Depth to bottom of lithologic unit (73662)			X	

---

* — Numbers in parentheses are STORET parameter codes

APPENDIX A-I (continued)

Station Descriptor Locations in the STORET Data Base
For Ground-Water/STORET Users

Descriptor Type-Well Subcategories	Station Header	Descriptive Paragraph	Parametric Data	
			Fixed date	Variable date
Drilling fluid (84116; used with 84063, "drilling method")			X	
Available logs (in variable date if more than one log is available)			X	X
Type of surface seal (84117)			X	
Bottom of seal (73663)			X	
Method of development (84118)			X	
Top of casing below LSD (73664)			X	
Bottom of casing segment below LSD (73665)			X	
Casing thickness (73666)			X	
Diameter of open section (73667)			X	
Width of opening (73668)			X	
Length of well opening (73669)			X	
Source of evacuation data (84119			X	

---

* -- Numbers in parentheses are STORET parameter codes

APPENDIX A-I (continued)

Station Descriptor Locations in the STORET Data Base For Ground-Water/STORET Users

Descriptor Type-Well Subcategories	Station Header	Descriptive Paragraph	Parametric Data	
			Fixed date	Variable date
Casing inner diameter (82513)			X	
Casing outer diameter (73670)				
Bore hole diameter (82513)			X	
Packing material (84120)			X	
Date of analysis (73672)			X	
Date of extraction (73673)			X	
Type of water use (84056)			X	

---

* -- Numbers in parentheses are STORET parameter codes

APPENDIX A-II (continued)

Sample Descriptor Locations in the STORET Data Base
For Ground-Water/STORET Users

Descriptor Type - Sampling Analysis Subcategories	Station Header	Descriptive Paragraph	Parametric Data	
			Fixed-date	Variable date
Volume of water evacuated from well prior to sample collection (73675)				X
Method of evacuation (84124)				X
Method of water-level measurement (84125)				X
Monitoring well sampling method				X (UMK)
Lab identification number (00008)				X
Sample number and type				X (SMK)
Sampling and analytical technique				X (UMK)
Pumping period (72004)				X
Sampling point description (84062)				X
Data quality assessment (84129)				X
Source of depth data (84126)		X		X
Method of depth measurement (84127)				X

---

* -- Numbers in parentheses are STORET parameter codes

APPENDIX A-II (continued)

Sample Descriptor Locations in the STORET Data Base For Ground-Water/STORET Users

Descriptor Type - Sample purpose Subcategories	Station Header	Descriptive Paragraph	Parametric Data	
			Fixed-date	Variable date
Performer of sampling (84067)				X
Sampling type and frequency (84053)				X
Inspection type (84057)				X
Regulating agency (84121)				X
Sampling purpose (84122)				X

---

* -- Numbers in parentheses are STORET parameter codes

APPENDIX A-II (continued)

Sample Descriptor Locations in the STORET Data Base For Ground Water/STORET Users

Descriptor type-Sampling condition Subcategories	Station Header	Descriptive Paragraph	Parametric Data	
			Fixed-date	Variable date
Production level (73674)				X
Sampling date				X
Elevation of land surface datum (72000)				X
Elevation of ground water (71993)				X
Depth to water level (72019)				X
Water level relative to mean sea level (82545)				X
Measuring point elevation (82514)				X
Depth from level to measuring point (82546)				X

---

* -- Numbers in parentheses are STORET parameter codes

APPENDIX A-II (continued)

Sample Descriptor Locations in the STORET Data Base
For Ground-Water/STORET Users

Descriptor Type - Sampling Analysis Subcategories	Station Header	Descriptive Paragraph	Parametric Data	
			Fixed-date	Variable date
Source of evacuation data (84119)				X
Source of water level data (84128)				X

---

* -- Numbers in parentheses are STORET parameter codes

APPENDIX B

Station Descriptor Parameter Codes, Values and Definition

Appendix B

Station Descriptor Parameter Codes, Values, and Definition

Parameter Code	Name	Values	Value Definitions
Facility Descriptors			
84059	Well ownership	PRIV	Private
		COMM	Commercial
		STATE	Statercial
		CORP	Corporation
		FED	Federal
		INST	Institutional
Physical Setting Descriptors			
84000	Geologic age or formation name	See Appx.I	
84001	Aquifer name	See Appx.I	
84060	Topography	VALLY	Valley
		SLOPE	Slope
		HLLTP	Hilltop
		DRAW	Draw
		FLAT	Flat
		ALVFN	Alluvial fan
		PLAYA	Playa

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Appendix B (continued, p.2)

Station Descriptor Parameter Codes, Values, and Definition

Parameter Code	Name	Values	Value Definitions
Physical Setting Descriptors (continued)			
84060	Topography (continued)	STRCH	Stream channel
		LCDEP	Local depression
		DUNES	Dunes
		FLPLN	Flood plain
		SNKHL	Sinkhole
		LSM	Lake, swamp, or marsh
		MNGRV	Mangrove swamp
		ESTRY	Offshore (estuary)
		PEDMT	Pediment
		TERRC	Alluvial or marine terrace
		UNDLG	Undulating
		OTHER	Other
84111	Lithologic Modifier	GW	Well graded gravel, gravel-sand mixture, little or no fines
		GP	Poorly-graded gravels, gravel-sand mixture, little or no fines
		GM	Silty gravels, gravel-sand-silt mixture
		GC	Clayey gravels, gravel-sand-clay mixtures
		SW	Well-graded sands, gravelly sands, little or no fines
		SP	Poorly-graded sands, gravelly sands, little or no fines

Appendix B (continued, p.3)

Station Descriptor Parameter Codes, Values, and Definition

Parameter Code	Name	Values	Value Definitions
Physical Setting Descriptors (continued)			
84111	Lithologic modifier (continued)	SM	Silty sands, sand-silt mixtures
		SC	Clayey sands, sand-clay mixtures
		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
		OL	Organic silt and organic silty clays of low plasticity
		MH	Inorganic silts, micaceous or diatomaceous fine sand or silty soils
		CH	Inorganic clays of high plasticity, fat clays
		OH	Organic clays of medium to high plasticity, organic silts
		PT	Peat, humus, swamp soils with high organic contents
84112	Source of geohydrologic data	DRLLG	Driller's log or report
		GLGST	Private geologist/consultant
		GPHYS	Depth interpreted from geophysical logs by some source agency
		MEMRY	Memory
		OWNOP	Reported by well owner/operator

Appendix B (continued, p.4)

Station Descriptor Parameter Codes, Values, and Definition

Parameter Code	Name	Values	Value Definitions
Physical Setting Descriptors (continued)			
84112	Source of geohydrologic data	OTHER	Reported by other
		RAGNC	Measured by reporting agency
		EPA	EPA
		STATE	State
		CL	Contract labs
		ESDLB	ESD labs
73661	Depth to top of lithologic unit	-----	Depth in feet to top of aquifer unit
73662	Depth to bottom of lithologic unit	-----	Depth in feet to bottom of aquifer unit
Well Descriptors			
84063	Drilling method	AIRRT	Air rotary
		BORE	Bored or augered
		CABLE	Cable-tool
		DUG	Dug
		HYDRT	Hydraulic rotary
		JET	Jetted
		AIRPR	Air percussion
		RVRT	Reverse rotary
		DRIVN	Driven
		DWASH	Drive-wash
		OTHER	Other

Appendix B (continued, p.5)

Station Descriptor Parameter Codes, Values, and Definition

Parameter Code	Name	Values	Value Definitions
Well Descriptors (continued)			
84063	Drilling method (continued)	TRNCH	Trenching
		SLDAG	Solid auger
		BKTAG	Bucket auger
		HLWAG	Hollow auger
		WLINE	Wire line
82509	Screened interval	-----	Length of screen, in feet
72001	Depth of hole	-----	Depth, in feet below LSD, of borehole into which well was placed
72008	Depth of well	-----	Depth, in feet below LSD, or well bottom

Appendix B (continued, p.6)

Station Descriptor Parameter Codes, Values, and Definition

Parameter Code	Name	Values	Value Definitions
Well Descriptors (continued)			
84113	Well intake finish	PCNCT	Porous concrete
		FLPRF	Field perforations
		FCPRF	Factory perforations
		HZLGL	Horizontal gallery
		OPNND	Open end
		MSCRN	Screen, machine slotted
		FSCRN	Screen, field slotted
		WSCRN	Screen, wrapped wire
		SNDPT	Sand point
		PSYN	Porous synthetic
		WALLD	Walled
		OPNHL	Open hole
		OTHER	Other
		FRCRK	Fractured rock
		LVRSC	Louvered or shutter-type screen
		MSHSC	Mesh screen
		PERFC	Perforated, pourous, or slotted casing
		WWDSC	Wire-wound screen
		SNDPT	Sand point
		WLDSH	Walled or shored
		OPNHL	Open hole
		UNKSC	Screen type unknown
		OTHER	Other
		UNKN	Unknown

Appendix B (continued, p.7)

Station Descriptor Parameter Codes, Values, and Definition

Parameter Code	Name	Values	Value Definitions
Well Descriptors (continued)			
84114	Well Casing Material	BRSBZ	Brass or bronze
		SS305	Stainless steel 305
		SS316	Stainless steel 316
		OTHSS	Other stainless steel
		STEEL	Steel
		CTSTL	Coated steel
		COPPR	Copper
		GALFE	Galvanized iron
		WRTFE	Wrought iron
		OTHRM	Other metal
		BRICK	Brick
		CNCRT	Concrete
		PVC	PVC
		FBRGL	Fiberglass
		OTHPL	Other plastic
		TEFLN	Teflon
		ROCK	Rock or stone
		TILE	Tile
		WOOD	Wood
		OTHER	Other

Appendix B (continued, p.8)

Station Descriptor Parameter Codes, Values, and Definition

Parameter Code	Name	Values	Value Definitions
Well Descriptors (continued)			
84115	Type of Material from Which Opening is Made	BRSBZ	Brass or bronze
		SS305	Stainless steel 305
		SS316	Stainless steel 316
		OTHSS	Other stainless steel
		STEEL	Steel
		CTSTL	Coated steel
		COPPR	Copper
		GALFE	Galvanized iron
		WRTFE	Wrought iron
		OTHRM	Other metal
		BRICK	Brick
		CNCRT	Concrete
		PVC	PVC
		FBRGL	Fiberglass
		OTHPL	Other plastic
		TEFLN	Teflon
		ROCK	Rock or stone
		TILE	Tile
		WOOD	Wood
		OTHER	Other

Appendix B (continued, p.9)

Station Descriptor Parameter Codes, Values, and Definition

Parameter Code	Name	Values	Value Definitions
Well Descriptors (continued)			
84116	Drilling Fluid (to be used with parameter code 84063, "drilling method"; to enter several, enter as separate records one minute apart)	AIR	Air
		WATER	Water
		BENTT	Bentonite
		OTINO	Other inorganic
		REVRT	Revert
		OORG	Other organic
84055	Available logs	E	Electric log
		G	Gamma log
		L	Lithologic log
		D	Drillers log
		T	Temperature log
		C	Caloper log
		R	Radiation log
		DRLTI	Drilling time log
		CSCOL	Casing collar log
		FLCON	Fluid conductivity log
		GSAMP	Geologists or sample log

Appendix B (continued, p.10)

Station Descriptor Parameter Codes, Values, and Definition

Parameter Code	Name	Values	Value Definitions
Well Descriptors (continued)			
84055	Available logs (continued)		
		MAGN	Magnetic log
		INDCT	Induction log
		GRAY	Gamma ray log
		DPMSV	Dipmeter survey log
		LTRLG	Laterlog
		MICRO	Microlog
		NTRN	Neutron log
		MCLTR	Microlaterlog
		PHOTO	Photographic log
		SONIC	Sonic log
		GGLOG	Gamma gamma log
		FLVEL	Fluid velocity log
		CORE	Core log
		VIDEO	Video log
		OTHER	Other
84117	Type of surface seal		
		BNTNT	Bentonite
		CLYCT	Clay or cuttings
		CMGRT	Cement grout
		OTHER	Other
73663	Bottom of seal	-----	Depth, in feet below land surface, to bottom of seal

Appendix B (continued, p.11)

Station Descriptor Parameter Codes, Values, and Definition

Parameter Code	Name	Values	Value Definitions
Well Descriptors (continued)			
84118	Method of development	AIRFT	Air lift
		BAILD	Bailed
		COMPR	Blown or surged with compressed air
		WJTTD	Washed or jetted
		NONE	None
		PUMPD	Pumped
		SRGBL	Surged with surge block
		OTHER	Other
73664	Top of casing below LSD	-----	Depth to top of casing section, in feet below land surface, negative value if casing extends above land surface
73665	Bottom of casing segment below LSD	-----	Depth to bottom of casing section, in feet below land surface
73666	Casing thickness	-----	Thickness of casing walls, in inches
73667	Diameter of open section	-----	Diameter of perforated or slotted pipe, screen, or hole (in inches)
73668	Width of opening	-----	Short dimension of perforation or slots, or mesh size of screens (in thousanths of an inch)

Appendix B (continued, p.12)

Station Descriptor Parameter Codes, Values, and Definition

Parameter Code	Name	Values	Value Definitions
Well Descriptors (continued)			
73669	Length of well opening	-----	Long dimension of perforations or slots, individual openings in screen or slotted pipe (in inches)
84119	Source of evacuation data	EPA OWNOP CL ESDLB STATE OTHER	EPA Owner/operator Contract labs ESD labs State Other
73670	Well casing outer diameter	-----	Diameter, in inches, from center of well to outside of casing
82513	Casing diameter (inches)	-----	Diameter, from center to inner casing, in inches
73671	Bore hole diameter	-----	Diameter of hole into which well is inserted, in inches

Appendix B (continued, p.13)

Station Descriptor Parameter Codes, Values, and Definition

Parameter Code	Name	Values	Value Definitions
Well Descriptors (continued)			
84120	Packing material	SAND	Sand
		GRAVL	Gravel
		NBKFL	Natural backfill
		SYNTH	Synthetic
73672	Date of analysis	-----	Date sample was analyzed in laboratory or field to obtain reported value, in YYMMDD
73673	Date of extraction	-----	Date organic extraction was made to obtain reported value, in YYMMDD
84061	Well use	OBSWL	Observation well
		WTRSP	Water Supply
		PETRO	Oil or gas
		RSRCH	Research
		INJCT	Injection/disposal
		ABAN	Abandoned
		DEWTR	Depressuring/ dewatering
		MINNG	Minning
		UNUSD	Unused

Appendix B (continued, p.14)

Station Descriptor Parameter Codes, Values, and Definition

Parameter Code	Name	Values	Value Definitions
Well Descriptors (continued)			
84061	Well use (continued)	RECHG	Recharge
		DRAIN	Drainage
		MONWQ	Water quality monitoring
		ANOD	Anode
		EMSPL	Stand-by emergency supply
		GEOTH	Geothermal
		SEIS	Seismic
		HTRES	Heat reservoir
		MINE	Mine
		REPRS	Repressurize
		TEST	Test
		UNUSD	Unused
		WWDRL	Withdrawal of water
		DSTRD	Destroyed
		OTHER	Other use
		UNKN	Unknown use
84056	Type of water use	DMSTC	Domestic
		IND	Industrial
		PUBSP	Public supply
		COMM	Commercial

Appendix B (continued, p.15)

Station Descriptor Parameter Codes, Values, and Definition

Parameter Code	Name	Values	Value Definitions
Well Descriptors (continued)			
84056	Type of water use (continued)	FIRE	Fire protection
		PROC	Processing
		IRRIG	Irrigation
		STKSP	Stock supply
		AC	Air condition
		BOTTL	Bottling
		MIDIC	Medicinal
		RECR	Recreational
		DSAL	Desalination
		COOL	Cooling
		DEWTR	Dewater
		POWR	Power
		MING	Mining
		AQCLT	Aquacultural
		INST	Institution
		UNUSD	Unused
		OTHER	Other

APPENDIX C

Remark Codes to Use with STORET Data

APPENDIX C

Remark Codes to Use With STORET Data

Code	Definition
Blank	No remark
J	Estimated value
K	Actual value is known to be less than the value shown
L	Actual value is known to be greater than the value shown
M	Presence of material verified but not quantified
N	Presumptive evidence of presence of material
U	Material specifically analyzed for but not detected
B	Results based on colony count outside the acceptable range (non-ideal colony count)

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APPENDIX D

Sample Descriptor Parameter Codes, Values and Definition

Appendix D

Sample Descriptor Parameter Codes, Values, and Definition

Parameter Code	Name	Values	Value Definitions
Sample purpose descriptors			
84053	Sample type and frequency	WQM	Water quality, monthly
		WQQ	Water quality, quarterly
		WQS	Water quality, semi-annually
		WQA	Water quality, annually
		WLC	Water level, continuous
		WLM	Water level, monthly
		WLQ	Water level, quarterly
		WLS	Water level, semi-annually
		WLA	Water level, annually
84067	Nature of monitoring	SELF	Facility collected and analyzed sample
		COMP	Regulating agency collected and analyzed sample for compliance monitoring

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Appendix D (continued, p.2)

Sample Descriptor Parameter Codes, Values, and Definition

Parameter Code	Name	Values	Value Definitions
Sample purpose descriptors (continued)			
84121	Regulating agency	STATE	State is regulating facility
		FEDL	Federal agency is regulating facility
		OTHER	Other agency is regulating facility
84122	Sample purpose	BKGRD	Sampled to determine background levels
		GWQAL	Sampled to determine ground-water quality
		DWQAL	Sampled to determine ground-water suitability as drinking water source
		CNTMN	Sampled to determine ground-water contamination
		ASMNT	Sampled as part of facility's assessment plan
		PRMIT	Sampled as part of facility's permit requirements
Sampling condition descriptors			
73674	Production level	-----	Water level, in feet below LSD, while well was discharging
72000	Elevation of land surface datum	-----	Elevation of land surface, in feet above mean sea level

Appendix D (continued, p.3)

Sample Descriptor Parameter Codes, Values, and Definition

Parameter Code	Name	Values	Value Definitions
Sampling condition descriptors (continued)			
71993	Elevation of ground water	-----	Elevation of top of water table at sampling point, in feet above mean sea level
72019	Depth to water level	-----	Depth, in feet, from land surface to top of water table at sampling point
82545	Water level relative to mean sea level	-----	Difference between top of water table and mean sea level at sampling point
82514	Measuring point elevation	-----	Elevation of measuring point, in feet above mean sea level
82546	Depth from level to measuring point	-----	Depth, in feet, from land surface to measuring point, in feet
Sampling/Analytical Methods Descriptors			
73675	Volume of water evacuated from well prior to sample collection	-----	In gallons

Appendix D (continued, p.4)

Sample Descriptor Parameter Codes, Values, and Definition

Parameter Code	Name	Values	Value Definitions
Sampling/analytical methods descriptors (continued)***			
84119	Source of evacuation data	EPA	EPA
		OWNOP	Owner/operator
		CL	Contract labs
		ESDL	ESD labs
		STATE	State
		OTHER	Other
84124	Method of evacuation	APUM	Air lift pump
		BAIL	Bailed
		COMPA	Compressed air
		JETD	Jetted
		PERP	Peristaltic pump
		CENP	Centrifugal pump
		PITP	Pitcher pump
		SMPL	Sampler
		BUCKT	Bucket
		RTPMP	Rotary pump
		SBPMP	Submersible pump
		TBPMP	Turbine pump
		PSPMP	Piston pump
		BOTVB	Bottom valve bailer
		SRNGB	Syringe bailer
		DULVB	Dual valve bailer
		BLDRP	Bladder pump

Appendix D (continued, p.5)

Sample Descriptor Parameter Codes, Values, and Definition

Parameter Code	Name	Values	Value Definitions
Sampling/analytical methods descriptors (continued)			
84124	Method of evacuation (continued)	NLFTP	Nitrogen lift pump
		COMPN	Compressed nitrogen
		UNKN	Unknown
		OTHER	Other
84125	Method of Water-Level Measurement	ARLMS	Airline measurement
		ANGRP	Analog or graphic recorded
		CARLM	Calibrated airline measurement
		EST	Estimated
		PRSG	Pressure-gage measurement
		CPRSG	Calibrated pressure gage
		GPHYS	Interpreted from geophysical logs
		MNMTR	Manometer
		NRECG	Non-recording gage
		UNKN	Reported, method unknown
		STLTP	Steel tape
		ECTP	Electric tape
		CHLIN	Chalk line
		SOUND	Sounder
		CELTP	Calibrated electric tape
		OTHER	Other
		UNKN	Unknown

Appendix D (continued, p.6)

Sample Descriptor Parameter Codes, Values, and Definition

Parameter Code	Name	Values	Value Definitions
Sampling/analytical methods descriptors (continued)			
84126	Source of depth data	DRLLG	Driller's log or report
		GLGST	Private geologist/consultant
		GPHYS	Depth interpreted from geophysical logs by some source agency
		MEMRY	Memory
		OWNOP	Reported by well owner/operator
		OTHER	Reported by other
		RAGNC	Measured by reporting agency
		EPA	EPA
		STATE	State
		CL	Contract labs
		ESDLB	ESD labs
84127	Method of depth measurement	STLTP	Steel tape
		EST	Estimated
		CHLIN	Chalk line
		SOUND	Sounder
		GPHYS	Interpreted from geophysical logs
		UNKN	Unknown
		OTHER	Other

Appendix D (continued, p.7)

Sample Descriptor Parameter Codes, Values, and Definition

Parameter Code	Name	Values	Value Definitions
Sampling/analytical methods descriptors (continued)			
84128	Source of water level data	DRLLG	Driller's log or report
		GLGST	Private geologist/consultant
		GPHYS	Depth interpreted from geophysical logs by some source agency
		MEMRY	Memory
		OWNOP	Reported by well owner/operator
		OTHER	Reported by other
		RAGNC	Measured by reporting agency
		EPA	EPA
		STATE	State
		CL	Contract labs
		ESDLB	ESD labs
84077	Monitoring well sampling method	APUM	Air lift pump
		BAIL	Bailed
		COMPA	Compressed air
		JETD	Jetted
		PERP	Peristaltic pump
		CENP	Centrifugal pump
		PITP	Pitcher pump

Appendix D (continued, p.8)

Sample Descriptor Parameter Codes, Values, and Definition

Parameter Code	Name	Values	Value Definitions
Sampling/analytical methods descriptors (continued)			
84077	Monitoring well sampling method (continued)	SMPL	Sampler
		BUCKT	Bucket
		RTPMP	Rotary pump
		SBPMP	Submersible pump
		TBPMP	Turbine pump
		PSPMP	Piston pump
		BOTVB	Bottom valve bailer
		SRNGB	Syringe bailer
		DULVB	Dual valve bailer
		BLDRP	Bladder pump
		NLFTP	Nitrogen lift pump
		COMPN	Compressed nitrogen
		UNKN	Unknown
		OTHER	Other
00008	Lab identification number	-----	Coded identification number for laboratory where sample was analyzed
72004	Pumping period	-----	Pumping or flow period prior to sampling, in minutes

Appendix D (continued, p.9)

Sample Descriptor Parameter Codes, Values, and Definition

Parameter Code	Name	Values	Value Definitions
Sampling/analytical methods descriptors (continued)***			
84062	Sampling point description	LNDSR TPCAS PMPBS RECRD	Land surface Top of casing Pump base Continuous recorded
84129	Data quality assessment		(See Section 4.7 of this manual for code identification)

APPENDIX E

User Multipurpose Key ("UMK")

APPENDIX E

User Multipurpose Key (UMK)
Sampler-Type Values for Digits 1 and 2 of the UMK

Codes for Digits 1 and 2	Definition
00	Entry not needed/not applicable
01	Bottom valve bailer
02	Syringe bailer
03	Dual valve bailer
04	Rotary pump
05	Centrifugal pump
06	Peristaltic pump
07	Bladder pump
08	Turbine pump
09	Piston pump
10	Air lift pump
11	Nitrogen lift pump
12	Compressed air
13	Compressed nitrogen
14	Unknown
15	Other

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APPENDIX E (continued, p.2)

User Multipurpose Key ("UMK")

Sampler Material Codes for Digits 3,4, and 5 of the UMK

One code per digit, up to three may be stored per sample

Code for Digit 3 and/or 4 and/or 5	Definition
0	Not applicable
1	Stainless steel
2	Polyvinyl chloride (PVC)
3	Teflon
4	Polyalkene (polyethylene, polypropylene, etc)
5	Nylon
6	Rubber
7	Other

APPENDIX E (continued, p.3)

User Multipurpose Key ("UMK")

Lab or Field Determination Flag as Sixth Digit of the UMK

Code	Definition
0	Not applicable
1	EPA Lab (in-house and contractors)
2	EPA Field (in-house and contractors)
3	Owner/operator, field
4	Owner/operator, lab
5	Contract, field
6	Contract, lab
7	Unknown
8	Other

APPENDIX E (continued, p.4)

User Multipurpose Key ("UMK")

Analytical Method Codes for the 7-8 Digits of the UMK

Code for 7th and 8th digits	Definition
00	Not applicable
01	Gas chromatography/mass spectrometry (GC/MS)
02	Gas chromatography/flame ionization detector (GC/FID)
03	Gas chromatography/electron capture detector (GC/ECD)
04	Gas chromatography/thermal conductivity detector (GC/TD)
05	Gas chromatography/other
06	Liquid chromatography
07	Other chromatography
08	Atomic absorption spectrophotometry, flame (AA/flame)
09	Atomic absorption spectrophotometry, furnace (AA/furnace)
10	Atomic absorption spectrophotometry, other
11	Inductively coupled plasma (ICP)
12	Specific ion electrode (includes pH)
13	Resistivity or conductivity
14	Other electrochemical
15	Colorimetric
16	Infra-red spectrometry (IR)
17	Other spectrophotometric
18	Titration
19	Unknown
20	Other

APPENDIX F

STORET Parameter Codes for Some Classic Ground-Water Monitoring Parameters

APPENDIX F

STORET Parameter Codes for Some Classic Ground-Water Monitoring Parameters

Substance	STORET PARAMETER CODES					
	Total or Whole Water Sample	Units	Dissolved Fraction of Water	Units	Suspended Fraction of Water	Units
Drinking Water Suitability Parameters-						
Arsenic	01002	ug/l	01000	ug/l	01001	ug/l
Barium	01007	ug/l	01005	ug/l	01006	ug/l
Cadmium	01027	ug/l	01025	ug/l	01026	ug/l
Chromium	01034	ug/l	01030	ug/l	01031	ug/l
Fluoride	00951	mg/l	00950	mg/l	82299	mg/l
Lead	01051	ug/l	01049	ug/l	01050	ug/l
Mercury	71900	ug/l	71890	ug/l	71895	ug/l
Nitrate (as N)	00620	mg/l	n/a		n/a	
Selenium	01147	ug/l	01145	ug/l	01146	ug/l
Silver	01077	ug/l	01075	ug/l	01076	ug/l
Endrin	39390	ug/l	39391	ug/l	39392	ug/l
Lindane	39782	ug/l	38341	ug/l	n/a	
Methoxychlor	39480	ug/l	38478	ug/l	39479	ug/l
Toxaphene	39400	ug/l	39401	ug/l	n/a	
2,4-D	39730	ug/l	n/a		39733	ug/l
2,4,5-TP Silvex	39045	ug/l	n/a		n/a	
Radium (226 & 228)	11503	pCi/l	n/a		n/a	
• Radium (226)	09501	pCi/l	09503	pCi/l	09505	pCi/l
• Radium (228)	11501	pCi/l	81366	pCi/l	81368	pCi/l
Gross Alpha	01501	pCi/l	01503	pCi/l	01505	pCi/l
Gross Beta	03501	pCi/l	p3503	pCi/l	03505	pCi/l

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APPENDIX F (continued)

STORET Parameter Codes for Some Classic Ground-Water Monitoring Parameters

Substance	STORET PARAMETER CODES					
	Total or Whole Water Sample	Units	Dissolved Fraction of Water	Units	Suspended Fraction of Water	Units
Drinking Water Suitability Parameters (continued)						
Turbidity	00076	hach ftu	n/a		n/a	
Coliform Bacteria (Mem Fil)	31501	c/100ml	n/a		n/a	
Coliform Bacteria (Ferm Tube)	31505	mpn/100ml	n/a		n/a	
Ground-Water Quality Parameters						
Chloride	00940	mg/l	82295	ug/l	n/a	
Iron	01045	ug/l	01046	ug/l	01044	ug/l
Phenols	32730	ug/l	32732	ug/l	32733	ug/l
Sodium	00929	mg/l	00930	mg/l	00928	mg/l
Sulfate	00945	mg/l	00946	mg/l	n/a	
Ground-Water Contamination Indicator Parameters						
pH	00400	s.u.	n/a		n/a	
Specific conductance	00095	umhos/cm	n/a		n/a	
Total Organic Carbon	00680	mg/l	00681	mg/l	00689	mg/l
Total Organic Halogen						
• Purgeable organic halogen DX20	70354	ug/l	n/a		n/a	
• Total organic halogen DX20	70353	ug/l	n/a		n/a	
• Total organic halogen	81375	ug/l	n/a		n/a	
• Total organic halogen	78115	ug/l	n/a		n/a	

APPENDIX G

STORET Parameter Codes for Some Organic Chemicals

APPENDIX G

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
Acetonitrile (Ethanenitrile) (Methyl Cyanide (Acetonitrile))	76997	TOTAL	UG/L	75058
Acetophenone (Ethanone, 1-phenyl)	81553	TOT	UG/L	98862
	78755	SED	UG/KG	98862
3-(alpha-Acetonylbenzyl)-4-hydroxycoumarin and salts (Warfarin)	73500	TOTW	UG/L	81812
2-Acetylaminofluorene (Acetamide, N-(9H-fluoren-2-yl)-)	73501	TOTW	UG/L	53963
Acetyl chloride (Ethanoyl chloride)	73502	TOTW	UG/L	75365
1-Acetyl-2-thiourea (Acetamide, N-(aminothioxomethyl)-)	73503	TOTW	UG/G	591082
Acrolein (2-Propenal)	34210	TOTAL W	UG/L	107028
	34211	DISS	UG/L	107028
	34212	SUSP	UG/L	107028
	34213	SED	UG/KG DRY WGT	107028
	34214	TIS	MG/KG WET WGT	107028
	79540	WAS	MG/KG	107028
	82158	IN AIR	NG/CC	107028
Acrylamide (2-Propenamide)	73504	TOTAL	UG/L	79061
	38576			
Acrylonitrile (2-Propenenitrile)	34215	TOTW	UG/L	107131
	34216	DISS	UG/L	107131
	34217	SUSP	UG/L	107131
	34218	SED	UG/KG DRY WGT	107131

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1 -- Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

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Substance Name 1	Para. Code(s)	Medium	Units	Cas No.
Acrylonitrile (cont'd)	34219	TIS	MG/KG WET WGT	107131
	79541	WASTE	MG/KG	107131
	82159	IN AIR	NG/CC	107131
Aflatoxins ("N.O.S") 2	code not appropriate for classes of chemicals			
Aldrin (1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a,8b-hexahydro-endo,exo-1,4:5,8-dimethanonaphthalene)	39330	TOT	UG/L	309002
	39331	DIS	UG/L	309002
	39332	SUS FRAC	UG/L	309002
	34680	TIS	MG/KG WET WGT	309002
	39333	SED	UG/KG DRY WGT	309002
	39334	SHELFISH	UG/KG WT	309002
	45565	ADIPOSE TIS	MG/KG	309002
	46274	SOIL	NG/G	309002
	61460	SLUDGE LIQ	UG/L	309002
	61461	SLUDGE SOL	UG/KG	309002
	61462	SLUDGE TOT	UG/L	309002
	79542	WASTE	MG/KG	309002
	81713	SHEL	UG/KG DRY WT	309002
Allyl alcohol (2-Propen-1-ol)	73505	TOTW	UG/L	107186
Aluminum phosphide	73506	TOTW	UG/L	20859738
4-Aminobiphenyl ([1,1'-Biphenyl]-4-amine) (P-Aminobiphenyl)	77581	TOTAL	UG/L	92671

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2 -- ("N.O.S.") indicates not otherwise specified in 40 CFR §261 Appendix VIII. Since this is a class of chemicals versus a single chemical no parameter code can be assigned in the STORET system.

APPENDIX G (p.3)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
6-Amino-1,la,2,8,8a,8b-hexahydro-8-(hydroxymethyl)-8a-methoxy-5-methyl-carbamate azirino[2',3':3,4]pyrrolo [1,2-a]indole-4,7-dione, (ester)(Mitomycin C) (Azirino[2'3:3,4]pyrrolo (1,2-a)indole-4,7-dione, 6-amino-8-[((aminocarbonyl)oxy)methyl]-1,la,2, 8,8a,8b-hexahydro-8amethoxy-5-méthy-)	73507	TOTW	UG/L	50077
5-(Aminomethyl)-3-isoxazolol (3(2H)-Isoxazolone, 5-(aminomethyl)-) 4-Aminopyridine (4-Pyridinamine)	73508	TOTW	UG/L	2763964
Amitrole (lH-1,2,4-Triazol-3-amine)	73509	TOTW	UG/L	61825
Aniline (Benzenamine)	77089	TOTAL	UG/L	62533
Antimony and compounds ("N.O.S.")	01097	TOT	UG/L	7440360
	01095	DISS	UG/L	7440360
	01096	SUSP	UG/L	7440360
	01098	SED	MG/KG DRY WGT	7440360
	01099	TIS	MG/KG WET	7440360
	71919	FISH	UG/GM DWT	7440360
	79547	WASTE	MG/KG	7440360
Aramite (Sulfurous acid, 2-chloroethyl-, 2-[4-(1,1-dimethylethyl)phenoxy]-1-methylethyl ester)	73510	TOTW	UG/L	140578

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1 — Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

APPENDIX G (p.4)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
Arsenic and compounds ("N.O.S.")	01002	TOT	UG/L	7440382
	997	TOT INORG	UG/L	7440382
	995	DISS INORG	UG/L	7440382
	1000	DISS	UG/L	7440382
	22678	DISS ORG	UG/L	7440382
	22680	TRI DISS	UG/L	7440382
	22679	PENT DISS	UG/L	7440382
	996	SUSP INORG	UG/L	7440382
	1001	SUSP	UG/L	7440382
	978	TOT REC	UG/L	7440382
	1003	SED	MG/KG DRY WGT	7440382
	1004	TIS	MG/KG WET WGT	7440382
	1252		LB/D/CFS	7440382
	46551	ELEC T.	UG/L	7440382
	61520	SLUDGE LIQ	MG/L	7440382
	61521	SLUDGE SOL	MG/KG	7440382
	61522	SLUDGE TOT	MG/L	7440382
	71918	FISH	UG/GM DWT	7440382
	79548	WASTE	MG/KG	7440382
	81743	SHELL	MG/KG WET	7440382
	82504	DIS DDP	UG/KG	7440382
	82505	INSOL DD	UG/KG	7440382
	82506	TOT DRY	UG/KG	7440382
Arsenic acid (Orthoarsenic acid)	73511			7778394
Arsenic pentoxide (Arsenic (V) oxide)	73512			1303282

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1 -- Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

APPENDIX G (p.5)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
Arsenic trioxide (Arsenic (III) oxide)	73513	TOTW	UG/L	1327533
Auramine (Benzenamine, 4,4'-carbonimidoylbis[N,N-Dimethyl-,monohydrochloride)	73514	TOTW	UG/L	2465272
Azaserine (L-Serine, diazoacetate (ester))	73515	TOTW	UG/L	115026
Barium and compounds ("N.O.S.")	01007	TOT	UG/L	7440393
	01005	DISS	UG/L	7440393
	46558	DISS .+	UG/L	7440393
	01006	SUSP	UG/L	7440393
	01008		MG/KG-BA DRY WGT	7440393
	01009	TOT.REC.	UG/L	7440393
	01215	DIS DRY D	UG/KG	7440393
	01216	INS DRY D	UG/KG	7440393
	01217	TOT DRY D	UG/KG	7440393
	79550	WASTE	MG/KG	7440393
	81658	FISH	MG/KG WET WGT	7440393
	81828	SHELL	MG/KG WET WGT	7440393
Barium cyanide	See "Barium"; see "Cyanide"			
Benz[c]acridine (3,4-Benzacridine)	73516	TOTW	UG/L	225514
Benz[a]anthracene (1,2-Benzanthracene)	34526	TOT WTR	UG/L	56553
	34527	LISS	UG/L	56553
	34528	SUSP	UG/L	56553
	34529	SED	UG/KG DRY WGT	56553
	34530	TIS	MG/KG WET WGT	56553

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1 -- Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

APPENDIX G (p.6)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
Benz[a]anthracene (continued)	79509	WASTE	MG/KG	56553
Benzene (Cyclohexatriene)	34030	TOT	UG/L	71432
	34235	DISS	UG/L	71432
	34236	SUSP	UG/L	71432
	34237	SED	UG/KG DRY WGT	71432
	34238	TIS	MG/KG WET WGT	71432
	78124	HOH VOL	UG/L	71432
	79551	WASTE	MG/KG	71432
Benzenearsonic acid (Arsonic acid, phenyl-)	73517	TOTW	UG/L	98055
Benzene, dichloromethyl-(Benzal chloride) (dichlorophenylmethane)	77982		UG/L	98873
Benzenethiol (Thiophenol)	73518	TOTW	UG/L	108985
Benzidine ([1,1'-Biphenyl]-4,4'diamine)	39120	TOT	UG/L	92875
	34239	DISS	UG/L	92875
	34240	SUSP	UG/L	92875
	34241	TIS	MG/KG WET WGT	92875
	39121	SED	UG/KG DRY WGT	92875
	79553	WASTE	MG/KG	92875
Benzo(b)fluoranthene (2,3-Benzofluoranthene)	34230	TOTAL	UG/L	205992
	34231	DISS	UG/L	205992
	34232	SUSP	UG/L	205992
	34233	MUD	UG/KG DRY WT	205992

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APPENDIX G (p.7)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
Benzo(j)fluoranthene (7,8-Benzofluoranthene) (10,11-benzo(j)fluoranthene)	77800	TOTAL	UG/L	205823
	78122	TOT	UG/L	205823
Benzo[a]pyrene(3,4-Benzopyrene) (Benzo-a-pyrene)	34247	TOTW	UG/L	50328
	34248	DISS	UG/L	50328
	34249	SUSP	UG/L	50328
	34250	SED	UG/KG DRY WGT	50238
	34251	TIS	MG/KG WET WGT	50328
	79532	WASTE	MG/KG	50328
p-Benzoquinone (1,4-Cyclohexadienedione)	73519	TOTW	UG/L	106514
Benzotrichloride (Benzene, trichloromethyl) (trichloromethyl benzene)	77677	TOTAL	UG/L	98077
Benzyl chloride (Benzene, (chloromethyl)-)	73520	TOTW	UG/L	100447
Beryllium and compounds ("N.O.S.") [2]	01012	TOTS	UG/L	7440417
	01010	DISS	UG/L	7440417
	01011	SUSP	UG/L	7440417
	00998	TOT.REC.	UG/L	7440417
	01013	SED	MG/KG DRY WGT	7440417
	34252	TIS	MG/KG WET WGT	7440417
	61523	SLUDGE LIQ	MG/L	7440417
	61524	SLUDGE SOL	MG/KG	7440417

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APPENDIX G (p.8)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
Beryllium and compounds (continued)	61525	SLUDGE TOT	MG/L	7440417
	79556	WASTE	MG/KG	7440417
	81854	FISH	MG/KG DRY WGT	7440417
	82525	MACROPHT	MG/KG	7440417
Bis(2-chloroethoxy)methane (Ethane, 1,1'-[methylenebis(oxy)]bis[2-chloro-])	34278	TOTW	UG/L	111911
	34279	DISS	UG/L	111911
	34280	SUSP	UG/L	111911
	34281	SED	UG/KG DRY WGT	111911
	34282	TIS	MG/KG WET WGT	111911
	79559	WAS	MG/KG	111911
Bis(2-chloroethyl) ether (Ethane, 1,1'-oxybis[2-chloro-])	34273	TOTW	UG/L	111444
	34274	DISS	UG/L	111444
	34275	SUSP	UG/L	111444
	34276	SED	UG/KG DRY WGT	111444
	34277	TIS	MG/KG WET WGT	111444
	79560	WASTE	MG/KG	111444
N,N-Bis(2-chloroethyl)-2-naphthylamine (Chlornaphazine)	73521	TOTW	UG/L	494031
Bis(2-chloroisopropyl) ether (Propane, 2,2'-oxybis[2-chloro-])	73522	TOTW	UG/L	108601

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1 — Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

APPENDIX G (p.9)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
Bis(chloromehtyl) ether (Methane, oxybis[chloro-1]	34268	TOTW	UG/L	542881
	34269	DISS	UG/L	542881
	34270	SUSP	UG/L	542881
	34271	SED	UG/KG DRY WGT	542881
	34272	TIS	MG/KG WET WGT	542881
	82147	IN AIR	NG/CC	542881
Bis (2-ethylhexyl) phthalate (1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester) (Diethylhexyl phthalates) (Phthalates, diethylhexyl)	39100	TOTAL	UG/L	117817
	39103	DISS	UG/L	117817
	39104	SUSP	UG/L	117817
	39107	SUS.FRAC.	MG/KG D WT	117817
	39102	MUD-	UG/KG DRY	117817
	39099	TIS	MG/KG WET WGT	117817
	39101	FISH	UG/KG WWT	117817
	39106	SLDGE STP	UG/KG D WT	117817
Bromoacetone (2-Propanone, 1-bromo-)	73523	TOTW	UG/L	598312
Bromomethane (Methyl bromide) (Methyl bromide)	34413	TOTW	UG/L	74839
	34414	DISS	UG/L	74839
	34415	SUSP	UG/L	74839
	34416	SED	UG/KG DRY WGT	74839
	79653	WASTE	MG/KG WET WGT	74839
	82169	IN AIR	NG/CC	74839

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1 -- Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

APPENDIX G (p.10)

Substance Name 1	Para. Code(s)	Medium	Units	Cas No.
4-Bromophenyl phenyl ether (Benzene, 1-bromo-4-phenoxy-)	34636	TOTW	UG/L	101553
	34637	DISS	UG/L	101553
	34638	SUSP	UG/L	101553
	34639	SED	UG/KG DRY WGT	101553
	34640	TIS	MG/KG WET WGT	101553
Brucine (Strychnidin-10-one, 2,3-dimethoxy-)	73524	TOTW	UG/L	357573
2-Butanone peroxide (Methyl ethyl ketone, peroxide)	73525	TOTW	UG/L	1338234
Butyl benzyl phthalate (1,2-Benzenedicarboxylic acid, butyl phenylmethyl ester) (N-Butyl benzyl phthalate)	34292	TOTAL	UG/L	85687
	34293	DISS	UG/L	85687
	34294	SUSP	UG/L	85687
	34295	MUD	UG/KG DRY	85687
	34296	TIS	MG/KG WET	85687
2-sec-Butyl-4,6-dinitrophenol (DNBP) (Phenol, 2,4-dinitro-6-(1-methylpropyl)-) (Dinoseb) (2 Secondary Butyl 4,6-Dinitrophenol)	81287	TOT	UG/L	88857
	82226	WATER	UG/L	88857
	38779	DISS	UG/L	88857
	38780	SUSP	UG/L	88857
	38781	SED	UG/KG	88857
	38782	TIS	MG/KG	88857

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1 -- Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

APPENDIX G (p.11)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
Cadmium and compounds ("N.O.S.")	01027	TOT	UG/L	7440439
	01025	DISS	UG/L	7440439
	46559	DISS .+	UG/L	7440439
	01113	TOT.REC.	UG/L	7440439
	82491	TOT REC DD	UG/KG	7440439
	01026	SUSP	UG/L	7440439
	01019	MUD	MG/KG-CD WET WGT	7440439
	01028	MUD	MG/KG-CD DRY WGT	7440439
	01165	TOT.	LBS/DAY	7440439
	01253		LB/D/CFS	7440439
	46245	DTPA	MG/KG	7440439
	46269	TOTAL	MG/KG	7440439
	46309	TOTAL	MG/KG	7440439
	61526	SLUDGE LIQ	MG/L	7440439
	61527	SLUDGE SOL	MG/KG	7440439
	61528	SLUDGE TOT	MG/L	7440439
	71940	TIS	MG/KG WET WGT	7440439
	71941	TOTAL FISH	UG/GM DWT	7440439
	71946	EXTR	UG/L	7440439
	79580	WASTE	MG/KG	7440439
	81214	COLD ILLINOIS	MG/L	7440439
	81634	SHELL	MG/KG DRY WGT	7440439
	81728	PLANKTON	MG/KG DRY	7440439
	81735	ZOOPLANK	MG/KG DRY	7440439
	81744	SHELL	MG/KG WET	7440439
	81753	INTERST WAT	UG/L	7440439
	81772	AQ MC	MG/KG DRY WGT	7440439

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1 — Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

APPENDIX G (p.12)

Substance Name[1]	Para. Code(s)	Medium	Units	Cas No.
Cadmium and compounds (continued)	81780	EP AL	MG/KG DRY WGT	7440439
	81788	ANML	MG/KG DRY WGT	7440439
	81932	SUSPEND	UG/G	7440439
	82489	DIS DDP	UG/KG	7440439
	82490	INSOL DD	UG/KG	7440439
Calcium chromate (Chromic acid, calcium salt)	See "Chromium"			
Calcium cyanide	See "Cyanide"			
Carbon disulfide (Carbon bisulfide) (Carbondisulfide(CS2))	81309	TOT	UG/L	75150
	77041	TOTAL	UG/L	75150
	78544	SED	UG/KG	75150
Carbon oxyfluoride (Carbonyl fluoride)	73526	TOTW	UG/L	353504
Chloral (Acetaldehyde, trichloro-) (Chloral hydrate)	39108	TOT	MG/L	75876
	77447	TOTAL	UG/L	75876
Chlorambucil (Butanoic acid, 4-[bis(2-chloroethyl)amino]benzene-)	73527	TOTW	UG/L	305033
Chlordane (alpha and gamma isomers) (4,7-Methanoindan, 1,2,4,5,6,7,8,8-octachloro-3,4,7,7a-tetrahydro-) (alpha and gamma isomers) (chlordane (tech mix & metabs))	39350	TECH&MET TOT	UG/L	57749
	39352	TECH MET DIS	UG/L	57749
	39353	TECH&MET SUS	UG/L	57749
	39349	FISH	UG/KG WWT	57749
	34682	TECH&MET TIS	MG/KG WET	57749
	39351	TECH&MET MUD	UG/KG DRY	57749

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[1] — Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

APPENDIX G (p.13)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
Chlordane (continued)	61487	SLUDGE LIQ	UG/L	57749
	61488	SLUDGE SOL	UG/KG	57749
	61489	SLUDGE TOT	UG/L	57749
	79583	TECHMIX WASTE	MG/KG	57749
	81714	SHEL	UG/KG DRY WGT	57749
	81863	SHELL	UG/KG WET WGT	57749
Chlorinated benzenes ("N.O.S.") [2]	Code not appropriate for classes of chemicals			
Chlorinated ethane ("N.O.S.") [2]	Code not appropriate for classes of chemicals			
Chlorinated fluorocarbons ("N.O.S.") [2]	Code not appropriate for classes of chemicals			
Chlorinated naphthalene ("N.O.S.") [2]	Code not appropriate for classes of chemicals			
Chlorinated phenol ("N.O.S.") [2]	Code not appropriate for classes of chemicals			
Chloroacetaldehyde (Acetaldehyde, chloro-)	73528			107200
Chloroalkyl ethers ("N.O.S.") [2]	Code not appropriate for classes of chemicals			
p-Chloroaniline (Benzenamine, 4-chloro-)	73529	TOTW	UG/L	106478
Chlorobenzene (Benzene, chloro-)	34301	TOTW	UG/L	108907
	34302	DISS	UG/L	108907

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APPENDIX G (p.14)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
Chlorobenzene (continued)	34303	SUSP	UG/L	108907
	34304	SED	UG/KG DRY WGT	108907
	34305	TIS	MG/KG WET WGT	108907
	79586	WASTE	MG/KG	108907
	82141	IN AIR	NG/CC	108907
Chlorobenzilate (Benzeneacetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy-, ethyl ester)	39460	WHL WTR SMPL	UG/L	510156
	39461	MUD DRY	UG/KG	510156
	79007	FISH	UG/KG	510156
p-Chloro-m-cresol (Phenol, 4-chloro-3-methyl) (parachlorometa cresol (PCMC))	34452	TOTW	UG/L	59507
	34453	DISS	UG/L	59507
	34454	SUSP	UG/L	59507
	34455	SED	UG/KG DRY WGT	59507
	34456	TIS	MG/KG WET WGT	59507
	79682	WAS	MG/KG	59507
1-Chloro-2,3-epoxypropane (Oxirane, 2-(chloromethyl)-) (Epichlorohydrin)	77084	TOTAL	UG/L	106898
	81679	TOT	MG/L	106898
2-Chloroethyl vinyl ether (Ethene, (2-chloroethoxy)-)	34576	TOTW	UG/L	110758
	34577	DISS	UG/L	110758
	34578	SUSP	UG/L	110758
	34579	SED	UG/KG DRY WGT	110758
	34580	TIS	MG/KG WET WGT	110758
	79526	WAS	MG/KG	110758
	82148	IN AIR	NG/CC	110758

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1 -- Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

APPENDIX G (p.15)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
Chloroform (Methane, trichloro-)	32106	TOT	UG/L	67663
	34316	DISS	UG/L	67663
	34317	SUSP	UG/L	67663
	32003	CCE AND CAE	UG/L	67663
	32005	CCE	UG/L	67663
	32021	ETHER INSOLUBL	UG/L	67663
	32022	WATER SOLUBLES	UG/L	67663
	32270	EXT	MG/L	67663
	34318	SED	UG/KG DRY WGT	67663
	34319	TIS	MG/KG WET WGT	67663
	79589	WAS	MG/KG	67663
	82149	IN AIR	NG/CC	67663
Chloromethane (Methyl chloride)	34418	TOTW	UG/L	74873
	34419	DISS	UG/L	74873
	34420	SUSP	UG/L	74873
	34421	SED	UG/KG DRY WGT	74873
	34422	TIS	MG/KG WET WGT	74873
	79654	WASTE	MG/KG	74873
	82162	IN AIR	NG/CC	74873
Chloromethyl methyl ether (Methane, chloromethoxy-)	73530	TOTW	UG/L	107302

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1 — Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

APPENDIX G (p.16)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
2-Chloronaphthalene (Naphthalene, beta-chloro-)	34581	TOTW	UG/L	91587
	34582	DISS	UG/L	91587
	34583	SUSP	UG/L	91587
	34584	SED	UG/KG DRY WGT	91587
	34585	TIS	MG/KG WET WGT	91587
	79527	WASTE	MG/KG	91587
2-Chlorophenol (Phenol, o-chloro-)	34586	TOTW	UG/L	95578
	34587	DISS	UG/L	95578
	34588	SUSP	UG/L	95578
	34589	SED	UG/KG DRY WGT	95578
	34590	TIS	MG/KG WET WGT	95578
	79528	WAS	MG/KG	95578
1-(o-Chlorophenyl)thiourea (Thiourea, (2-chlorophenyl)-) (N-(2-chlorophenyl) thiourea; (o-chlorphenyl) thiourea; 1-(2-chlorophenyl) thiourea 1-(2-chlorphenyl)-2-thiourea; 1-(ochlorophenyl)-2-thiourea)	73531	TOTW	UG/L	5344821
3-Chloropropionitrile (Propanenitrile, 3-chloro-) (3-Chloropropanonitrile; beta-chloropropionitrile; 1-chloro-2-cyanoethane)	73532	TOTW	UG/L	542767

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[1] -- Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

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APPENDIX G (p.17)

Substance Name[1]	Para. Code(s)	Medium	Units	Cas No.
Chromium and compounds ("N.O.S.")[2]	01034	CR,TOT	UG/L	7440473
	82058	TOTAL REMOVAL	%	7440473
	01030	DISS	UG/L	7440473
	01031	SUSP	UG/L	7440473
	01118	TOT.REC.	UG/L	7440473
	01024	MUD	MG/KG WET WGT	7440473
	01029	SED	MG/KG DRY WGT	7440473
	01254	TOTAL	LB/D/CFS	7440473
	01255	HEX	LB/D/CFS	7440473
	46244	DTPA	MG/KG	7440473
	46271	TOTAL	MG/KG	7440473
	46308	TOTAL	MG/KG	7440473
	46560	DISS.+	UG/L	7440473
	61511	SLUDGE LIQ	MG/L	7440473
	61512	SLUDGE SOL	MG/KG	7440473
	61513	SLUDGE TOT	MG/L	7440473
	71939	FISH	UG/G OR MG/KG WT	7440473
	71943	TOTAL FISH	UG/GM DWT	7440473
	71947	EXTR	UG/L	7440473
	81215	(HEX)ILL-COLD	MG/L	7440473
	81217	TOTAL ILL-COLD	MG/L	7440473
	81729	PLANKTON	MG/KG DRY	7440473
	81736	ZOOPLANK	MG/KG DRY	7440473
	81745	SHELL	MG/KG WET	7440473
	81773	AQ MCDRY	MG/KG WGT	7440473
	81781	EP ALDRY	MG/KG WGT	7440473
	81789	ANML DRY	MG/KG WGT	7440473

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Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
Chromium and compounds (continued)	81796	SHELL	MG/KG DRY WGT	7440473
	82059	TOTAL	KG/BATCH	7440473
	82399	HEXAVAL	KG/BATCH	7440473
	82498	DIS D D P	UG/KG	7440473
	82499	INSOL D D	UG/KG	7440473
	82500	TOT REC DD	UG/KG	7440473
	85007	TOTAL	#/DAY	7440473
Chrysene (1,2-Benzphenanthrene)	34320	TOTW	UG/L	218019
	34321	DISS	UG/L	218019
	34322	SUSP	UG/L	218019
	34323	SED	UG/KG DRY WGT	218019
	34324	TIS	MG/KG WET WGT	218019
	79592	WASTE	MG/KG	218019
Citrus red No. 2 (2-Naphthol, 1-[(2,5-dimethoxyphenyl)azo]-)	73533	TOTW	UG/L	6358538
Coal tars ("N.O.S.") [2]	Code not appropriate for classes of chemicals			
Copper cyanide (cuprous cyanide; copper (I) cyanide; copper (2) cyanide; copper (II) cyanide; cupric cyanide)	See "Copper"; see "Cyanide"			
Creosote (Creosote, wood) ("N.O.S.") [2]	Code not appropriate for classes of chemicals			
Cresols (Cresylic acid) (Phenol, methyl-) ("N.O.S.") [2]	Code not appropriate for classes of chemicals			

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Substance Name[1]	Para. Code(s)	Medium	Units	Cas No.
Crotonaldehyde (2-Butenal)	77028	TOTAL	UG/L	4170303
Cyanides (soluble salts and complexes) ("N.O.S.")[2]	00158	WHL WAT FREE	KG/BATCH	57125
	00719	FREE HBG METH	UG/L	57125
	00720	CN-TOT	MG/L	57125
	00723	DISSOLVE	UG/L	57125
	00722	FREE CN	MG/L	57125
	34325	SUSP	MG/L	57125
	79595	WASTE	MG/KG	57125
	85008	TOTAL	#/DAY	57125
	00721	SED	MG/KG DRY WGT	57125
	01257		LB/D/CFS	57125
	34326	TIS	MG/KG WET WGT	57125
	61555	SLUDGE TOT	MG/L	57125
	61556	SLUDGE SOL	MG/KG	57125
	61557	SLUDGE LIQ	MG/L	57125
	81208	FREE	MG/L	57125
	81210	ILLINOIS	MG/L	57125
Cyanogen (Ethanedinitrile)	73534	TOTW	UG/L	460195
Cyanogen bromide (Bromine cyanide)	73535	TOTW	UG/L	506683
Cyanogen chloride (Chlorine cyanide)	77022	TOTAL	UG/L	506774
Cycasin (beta-D-Glucopyranoside, (methyl-ONN-azoxy)methyl-)	73536	TOTW	UG/L	14901087

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Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
2-Cyclohexyl-4,6-dinitrophenol (Phenol, 2-cyclohexyl-4,6-dinitro-)	73537	TOTW	UG/L	131895
Cyclophosphamide (2H-1,3,2-Oxazaphosphorine, [bis(2-chloroethyl)amino]-tetra-hydro-, 2-oxide)	73538	TOTW	UG/L	50180
Daunomycin (5,12-Naphthacenedione, (8S-cis)-8-acetyl-10-[(3-amino-2,3,6-trideoxy)-alpha-L-lyxo-hexopyranosyl)oxy]-7,8,9,10-tetrahydro-6,8,11-trihydroxy-1-methoxy-)	73539	TOTW	UG/L	20830813
DDD (Dichlorodiphenyldichloroethane) (Ethane, 1,1-dichloro-2,2-bis(p-chlorophenyl)-) (p,p'-DDD)	39310	TOT	UG/L	72548
	39360	WHL WTR SMPL	UG/L	72548
	34651	DIS	UG/L	72548
	39361	FLT FRAC	UG/L	72548
	34652	SUS	UG/L	72548
	39362	SUS FRAC	UG/L	72548
	39311	SED	UG/KG DRY WGT	72548
	39312	TIS	MG/KG WET WGT	72548
	39313	TISSUE FAT	UG/G	72548
	39314	ORGANISM TOT	UG/G	72548
	39363	MUD	UG/KG	72548
	39364	SHELFISH	UG/KG WT	72548
	45559	ADIPOSE	TISMG/KG	72548
	46284	SOIL	NG/G	72548
	46285	SOIL	NG/G	72548
	61481	SLUDGE LIQ	UG/L	72548
	61482	SLUDGE SOL	UG/KG	72548

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Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
DDD (continued)	61483	SLUDGE TOT	UG/L	72548
	79679	WASTE	MG/KG	72548
	81625	SHEL	UG/KG DRY WGT	72548
	81860	SHELL	UG/KG WET WGT	72548
	81897	TOT TISS	MG/KG WET WGT	72548
	85210	EGGS	UG/G	72548
	85217	AIR	NG/M3	72548
	85224	PLANT	UG/G	72548
DDE (Ethylene, 1,1-dichloro-2,2-bis (4-chlorophenyl)-) (p,p' DDE; DDE)	39320	TOT	UG/L	72559
	39365	WHL WTR SMPL	UG/L	72559
	34653	DIS	UG/L	72559
	39366	FLT FRAC	UG/L	72559
	34654	SUS	UG/L	72559
	39367	SUS FRAC	UG/L	72559
	39321	SED	UG/KG DRY WGT	72559
	39322	TIS	MG/KG WET WGT	72559
	39323	TISSUE FAT	UG/G	72559
	39324	ORGANISM TOT	UG/G	72559
	39368	MUD	UG/KG	72559
	39369	SHELFISH	UG/KG WT	72559
	45557	ADIPOSE TIS	MG/KG	72559
	46286	SOIL	NG/G	72559
	61478	SLUDGE LIQ	UG/L	72559
	61479	SLUDGE SOL	UG/KG	72559
	61480	SLUDGE TOT	UG/L	72559
	79680	WASTE	MG/KG	72559
	81626	SHEL	UG/KG DRY WGT	72559

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Substance Name 1	Para. Code(s)	Medium	Units	Cas No.
DDE (continued)	81861	SHELL	UG/KG WET WGT	72559
	81896	TOT TISS	MG/KG WET WGT	72559
	85211	EGGS	UG/G	72559
	85218	AIR	NG/M3	72559
	85225	PLANT	UG/G	72559
DDT (Dichlorodiphenyltrichloroethane) (Ethane, 1,1,1-trichloro-2,2-bis(p-chlorophenyl)-) (p,p'-DDT; DDT)	39300	TOT	UG/L	50293
	39370	WHL SMPL	UG/L	50293
	34655	DIS	UG/L	50293
	39371	FLT FRAC	UG/L	50293
	34656	SUS	UG/L	50293
	39372	SUS FRAC	UG/L	50293
	39290	TISSUE TOT	UG/G	50293
	39301	SED	UG/KG DRY WGT	50293
	39302	TIS	MG/KG WET WGT	50293
	39303	TISSUE FAT	UG/G	50293
	39304	ORGANISM TOT	UG/G	50293
	39317	FISH	UG/KG	50293
	39358	ORGANISM TOT	UG/G	50293
	39359	SUM ANALOGS MUD	UG/KG	50293
	39373	MUD	UG/KG	50293
	39374	SHELFISH	UG/KG WT	50293
	39375	SUM ANALOGS ORG	UG/G	50293
	39376	SUM TISSUE	UG/G	50293
	39377	TISSUE FAT	UG/G	50293
	39378	SUM TISSUE	FAT UG/G	50293
	45555	ADIPOSE TIS	MG/MG	50293
	61475	SLUDGE LIQ	UG/L	50293

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Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
DDT (continued)	61476	SLUDGE SOL	UG/KG	50293
	61477	SLUDGE TOT	UG/L	50293
	79681	WASTE	MG/KG	50293
	81715	SHEL	UG/KG DRY WGT	50293
	81800	SED	MG/KG WET WGT	50293
	81801	SED	MG/KG WET WGT	50293
	81833	FISH	MG/KG DRY WGT	50293
	81862	SHELL	UG/KG WET WGT	50293
	85213	EGGS	UG/G	50293
	85220	AIR	NG/M3	50293
	85227	PLANT	UG/G	50293
Diallate (S-(2,3-dichloroallyl) diisopropylthiocarbamate)	73540	TOTW	UG/L	2303164
Dibenz[a,h]acridine (1,2,5,6-Dibenzacridine)	73541	TOTW	UG/L	226368
Dibenz[a,j]acridine (1,2,7,8-Dibenzacridine)	73542	TOTW	UG/L	224420
Dibenz[a,h]anthracene (1,2,5,6-Dibenzanthracene) (1,2:5,6-dibenz(a)anthracene)	34556	TOTW	UG/L	53703
	34557	DISS	UG/L	53703
	34558	SUSP	UG/L	53703
	34559	SED	UG/KG DRY WGT	53703
	34560	TIS	MG/KG WET WGT	53703
	79040	TIS	MG/KG WET WT	53703
	79508	WASTE	MG/KG	53703

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Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
7H-Dibenzo[c,g]carbazole (3,4,5,6-Dibenzcarbazole)	73543	TOTW	UG/L	194592
Dibenzo[a,e]pyrene (1,2,4,5-Dibenzpyrene)	73544	TOTW	UG/L	192654
Dibenzo[a,h]pyrene (1,2,5,6-Dibenzpyrene) (Dibenzo(b,def)chrysine)	73545	TOTW	UG/L	189640
Dibenzo[a,i]pyrene (1,2,7,8-Dibenzpyrene)	73546			189559
1,2-Dibromo-3-chloropropane (Propane, 1,2-dibromo-3-chloro-) (dibromochloropropane; DBCP)	38437	TOTW	UG/L	96128
	38438	DISS	UG/L	96128
	38439	SUSP	UG/L	96128
	38440	SED	UG/KG	96128
	38441	TIS	MG/KG	96128
	38760	TOTW	UG/L	96128
	38761	DISS	UG/L	96128
	38762	SUSP	UG/L	96128
	38763	SED	UG/KG	96128
	38764	TIS	MG/KG	96128
1,2-Dibromoethane (Ethylene dibromide)	77651	TOTAL	UG/L	106934
Dibromomethane (Methylene bromide)	77596	TOTAL	UG/L	74953
Di-n-butyl phthalate (1,2-Benzenedicarboxylic acid, dibutyl ester) (Dibutyl phthalates)	39110	TOTAL	UG/L	84742
	34327	DISS	UG/L	84742
	39114	SUSP	UG/L	84742
	39115	SUS.FRAC.	UG/KG D WT	84742

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APPENDIX G (p.25)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
Di-n-butyl phthalate (continued)	39111	FISH	UG/KG WWT	84742
	39112	MUD	UG/KG DRY	84742
	39113	FISH	UG/KG WWT	84742
	34683	TIS	MG/KG WET	84742
	79599	WASTE	MG/KG	84742
	39116	SLDGE STP	UG/KG D WT	84742
o-Dichlorobenzene (Benzene, 1,2-dichloro-)	34536	TOTW	UG/L	95501
	34537	DISS	UG/L	95501
	34538	SUSP	UG/L	95501
	34539	SED	UG/KG DRY WGT	95501
	34540	TIS	MG/KG WET WGT	95501
	79511	WASTE	MG/KG	95501
m-Dichlorobenzene (Benzene, 1,3-dichloro-) (m,p-dichlorobenzene)	34566	TOTW	UG/L	541731
	34567	DISS	UG/L	541731
	34568	SUSP	UG/L	541731
	34569	SED	UG/KG DRY WGT	541731
	34570	TIS	MG/KG WET WGT	541731
	79516	WASTE	MG/KG	541731
	82512	TOTAL	UG/L	541731
p-Dichlorobenzene (Benzene, 1,4-dichloro-)	34571	TOTW	UG/L	106467
	34572	DISS	UG/L	106467
	34573	SUSP	UG/L	106467
	34574	SED	UG/KG DRY WGT	106467
	34575	TIS	MG/KG WET WGT	106467
	79517	WASTE	MG/KG	106467

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APPENDIX G (p.26)

Substance Name[1]	Para. Code(s)	Medium	Units	Cas No.
Dichlorobenzene ("N.O.S.")[2] (Benzene, dichloro-("N.O.S.")[2]	Code not appropriate for classes of chemicals			
3,3'-Dichlorobenzidine ([1,1'-Biphenyl] -4,4'-diamine, 3,3'-dichloro-)	34631	TOTW	UG/L	91941
	34632	DISS	UG/L	91941
	34633	SUSP	UG/L	91941
	34634	SED	UG/KG DRY WGT	91941
	34635	TIS	MG/KG WET WGT	91941
	79530	WASTE	MG/KG	91941
1,4-Dichloro-2-butene (2-Butene, 1,4-dichloro-)	73547			110576
Dichlorodifluoromethane (Methane, dichlorodifluoro-)	34668	TOTW	UG/L	75718
	34332	DISS	UG/L	75718
	34333	SUSP	UG/L	75718
	34334	SED	UG/KG DRY WGT	75718
	34335	TIS	MG/KG WET WGT	75718
	79604	WASTE	MG/KG	75718
	82152	IN AIR	NG/CC	75718
1,1-Dichloroethane (Ethylidene dichloride)	34496	TOTW	UG/L	75343
	34497	DISS	UG/L	75343
	34498	SUSP	UG/L	75343
	34499	SED	UG/KG DRT WT	75343
	34500	TISS	MG/KG WET WT	75343
	79504	WASTE	MG/KG	75343
	82144	IN AIR	NG/CC	75343

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APPENDIX G (p.27)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
1,2-Dichloroethane (Ethylene dichloride)	32103	TOT	UG/L	107062
	34531	TOTW	UG/L	107062
	34532	DISS	UG/L	107062
	34533	SUSP	UG/L	107062
	34534	SED	UG/KG DRY WGT	107062
	34535	TIS	MG/KG WET WGT	107062
	79512	WAS	MG/KG	107062
	82142	IN AIR	NG/CC	107062
trans-1,2-Dichloroethene (1,2-Dichloroethylene)	34546	TOTW	UG/L	156605
	34547	DISS	UG/L	156605
	34548	SUSP	UG/L	156605
	34549	SED	UG/KG DW	156605
	34550	TISS	MG/KG WW	156605
	79515	WAS	MG/KG	156605
	82165	IN AIR	NG/CC	156605
Dichloroethylene ("N.O.S.") [2] (Ethene, dichloro-("N.O.S.") [2]	code not appropriate for classes of chemicals			
1,1-Dichloroethylene (Ethene, 1,1-dichloro-)	34501	TOTW	UG/L	75354
	34502	DISS	UG/L	75354
	34503	SUSP	UG/L	75354
	34504	SED	UG/KG DRY WGT	75354
	34505	TIS	MG/KG WET WGT	75354
	79505	WASTE	MG/KG	75354
	82166	IN AIR	NG/CC	75354

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APPENDIX G (p.28)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
Dichloromethane (Methylene chloride)	34423	TOTW	UG/L	75092
	34424	DISS	UG/L	75092
	34425	SUSP	UG/L	75092
	34426	SED	UG/KG DRY WGT	75092
	34427	TIS	MG/KG WET WGT	75092
	78750	SED	UG/KG	75092
	79662	WASTE	MG/KG	75092
	82167	IN AIR	NG/CC	75092
2,4-Dichlorophenol (Phenol, 2,4-dichloro-)	34601	TOTW	UG/L	120832
	34602	DISS	UG/L	120832
	34603	SUSP	UG/L	120832
	34604	SED	UG/KG DRY WGT	120832
	34605	TIS	MG/KG WET WGT	120832
	79521	WASTE	MG/KG	120832
2,6-Dichlorophenol (Phenol, 2,6-dichloro-)	77541	TOTAL	UG/L	87650
2,4-Dichlorophenoxyacetic acid (2,4-D), salts and esters (Acetic acid, 2,4-dichloro-dichlorophenoxy-, salts and esters)	39730	WHL SMPL	UG/L	94757
	39731	MUD	UG/KG	94757
	39732	FLT FRAC	UG/L	94757
	39733	SUS FRAC	UG/L	94757
	39734	FISH	UG/KG WWT	94757
Dichlorophenylarsine (Phenyl dichloroarsine)	73548	TOTW	UG/L	696286
Dichloropropane ("N.O.S.")[2] (Propane, dichloro-, "N.O.S.")[2]	Code not appropriate for classes of chemicals			

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APPENDIX G (p.29)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
1,2-Dichloropropane (Propylene dichloride)	34541	TOTW	UG/L	78875
	34542	DISS	UG/L	78875
	34543	SUSP	UG/L	78875
	34544	SED	UG/KG DRY WGT	78875
	34545	TIS	MG/KG WET WGT	78875
	79513	WAS	MG/KG	78875
	82164	IN AIR	NG/CC	78875
Dichloropropanol ("N.O.S.") [2]	Code not appropriate for classes of chemicals			
Dichloropropene ("N.O.S.") [2]	Code not appropriate for classes of chemicals			
1,3-Dichloropropene (1-Propene, 1,3-dichloro-)	34561	TOTW	UG/L	542756
	34562	DISS	UG/L	542756
	34563	SUSP	UG/L	542756
	34564	SED	UG/KG DRY WGT	542756
	34565	TIS	MG/KG WET WGT	542756
	77163	TOTAL	UG/L	542756
	82163	IN AIR	NG/CC	542756
Dieldrin (1,2,3,4,10.10-hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a octa-hydro-endo-exo-1,4:5,8-dimethanonaphthalene)	39380	TOT	UG/L	60571
	39381	DIS	UG/L	60571
	39382	SUS FRAC	UG/L	60571
	34684	TIS	MG/KG	60571
	39383	SED	UG/KG DRY WGT	60571
	39384	CLAY	UG/KG	60571
	39385	SLT-CLAY	UG/KG	60571

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APPENDIX G (p.30)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
Dieldrin (continued)	39386	SAND	UG/KG	60571
	39387	SHELFISH	UG/KG WT	60571
	39404	TIS	MG/KG WET WGT	60571
	39405	TISSUE FAT	UG/G	60571
	39406	ORGANISM TOT	UG/G	60571
	45566	ADIPOSE TIS	M G/KG	60571
	46275	SOIL	NG/G	60571
	61463	SLUDGE LIQ	UG/L	60571
	61464	SLUDGE SOL	UG/KG	60571
	61465	SLUDGE TOT	UG/L	60571
	79607	WASTE	MG/KG	60571
	81716	SHEL	UG/KG DRY WGT	60571
	81834	FISH	MG/KG DRY WGT	60571
	85215	EGGS	UG/G	60571
	85222	AIR	NG/M3	60571
	85229	PLANT	UG/G	60571
1,2:3,4-Diepoxybutane (2,2'-Bioxirane)	73549	TOTW	UG/L	1464535
Diethylarsine (Arsine, diethyl-)	73550	TOTW	UG/L	692422
N,N-Diethylhydrazine (Hydrazine, 1,2-diethyl)	73551	TOTW	UG/L	1615801
O,O-Diethyl S-methyl ester of phosphorodithioic acid (Phosphorodithioic acid, O,O-diethyl S-methyl ester)	73552	TOTW	UG/L	3288582

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1 -- Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

APPENDIX G (p.31)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
O,O-Diethylphosphoric acid, O-p-nitrophenyl ester (Phosphoric acid, diethyl p-nitrophenyl ester) (Paraoxon-O,O diethyl O,P nitrophenyl phos)	39152	WATER	UG/L	311455
Diethyl phthalate (1,2-Benzenedicarboxylic acid, diethyl ester)	34336	TOTW	UG/L	84662
	34337	DISS	UG/L	84662
	34338	SUSP	UG/L	84662
	34339	SED	UG/KG DRY WGT	84662
	34340	TIS	MG/KG WET WGT	84662
O,O-Diethyl O-2-pyrazinyl phosphorothioate (Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester)	73553	TOTW	UG/L	297972
Diethylstilbesterol (4,4'-Stilbenediol, alpha,alpha-diethyl, bis(dihyrdrogen phosphate, (E)-)	82192	WATER	UG/L	56531
Dihydrosafrole (Benzene, 1,2-methylenedioxy-4-propyl-)	73554	TOTW	UG/L	94586
3,4-Dihydroxy-alpha-(methylamino)methyl benzyl alcohol (1,2-Benzenediol, 4-[1-hydroxy-2-(methylamino)ethyl]-)	73555	TOTW	UG/L	51434
Diisopropylfluorophosphate (DFP) (Phosphorofluoridic acid, bis(1-methylethyl) ester)	73556	TOTW	UG/L	55914

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1 -- Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

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APPENDIX G (p.32)

Substance Name 1	Para. Code(s)	Medium	Units	Cas No.
Dimethoate (Phosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester)	38458 38459 38460 38461 39009 46303 46314	DISS SUSP SED TIS WTR FPD SOIL WHL SMPL	UG/L UG/L UG/KG MG/KG UG/L NG/G UG/L	60515 60515 60515 60515 60515 60515 60515
3,3'-Dimethoxybenzidine ([1,1'-Biphenyl]-4,4'diamine, 3-3'-dimethoxy-)	73557	TOTW	UG/L	119904
p-Dimethylaminoazobenzene (Benzenamine, N,N-dimethyl-4-(phenylazo)-)	73558	TOTW	UG/L	60117
7,12-Dimethylbenz[a]anthracene (1,2-Benzanthracene, 7,12-dimethyl-)	73559	TOTW	UG/L	57976
3,3'-Dimethylbenzidine ([1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethyl-)	73560	TOTW	UG/L	119937
Dimethylcarbamoyl chloride (carbamoyl chloride, dimethyl-)	73561	TOTW	UG/L	79447
1,1-Dimethylhydrazine (Hydrazine, 1,1-dimethyl-)	81314	TOT	MG/L	57147
1,2-Dimethylhydrazine (Hydrazine, 1,2-dimethyl-)	73562	TOTW	UG/L	540738

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1 — Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

APPENDIX G (p.33)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
3,3-Dimethyl-1-(methylthio-)-2-butanone, O-[(methylamino)carbonyl]oxime (Thiofanox)	73563	TOTW	UG/L	39196184
alpha,alpha-Dimethylphenethylamine (Ethanamine, 1,1-dimethyl-2-phenyl-)	73564	TOTW	UG/L	122098
2,4-Dimethylphenol (Phenol, 2,4-dimethyl-)	34606	TOTW	UG/L	105679
	34607	DISS	UG/L	105679
	34608	SUSP	UG/L	105679
	34609	SFD	UG/KG DRY WGT	105679
	34610	TIS	MG/KG WET WGT	105679
	79522	WASTE	MG/KG	105679
Dimethyl phthalate (1,2-Benzenedicarboxylic acid, dimethyl ester)	34341	TOTW	UG/L	131113
	34342	DISS	UG/L	131113
	34343	SUSP	UG/L	131113
	34344	SED	UG/KG DRY WGT	131113
	34345	TIS	MG/KG WET WGT	131113
Dimethyl sulfate (Sulfuric acid, dimethyl ester)	73565	TOTW	UG/L	77781
Dinitrobenzene ("N.O.S.") [2]	code not appropriate for classes of chemicals			

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1 -- Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

2 -- ("N.O.S") indicates not otherwise specified in 40 CFR §261 Appendix VIII. Since this is a class of chemicals versus a single chemical no parameter code can be assigned in the STORET system.

APPENDIX G (p.34)

Substance Name 1	Para. Code(s)	Medium	Units	Cas No.
4,6-Dinitro-o-cresol and salts (Phenol, 2,4-dinitro-6-methyl-, and salts) (DNOC; 4,6-Dinitro-ortho-cresol)	34657	TOTW	UG/L	534521
	34658	DISS	UG/L	534521
	34659	SUSP	UG/L	534521
	34660	SED	UG/KG DRY WGT	534521
	34661	TIS	MG/KG WET WGT	534521
	39920	WHL SMPL	UG/L	534521
2,4-Dinitrophenol (Phenol, 2,4-dinitro-)	34616	TOTW	UG/L	51285
	34617	DISS	UG/L	51285
	34618	SUSP	UG/L	51285
	34619	SED	UG/KG DRY WGT	51285
	34620	TIS	MG/KG WET WGT	51285
	79523	WASTE	MG/KG	51285
2,4-Dinitrotoluene (Benzene, 1-methyl-2, 4-dinitro-)	34611	TOTW	UG/L	121142
	34612	DISS	UG/L	121142
	34613	SUSP	UG/L	121142
	34614	SED	UG/KG DRY WGT	121142
	34615	TIS	MG/KG WET WGT	121142
	79524	WASTE	MG/KG	121142
2,6-Dinitrotoluene (Benzene, 1-methyl-2,6-dinitro-)	34626	TOTW	UG/L	606202
	34627	DISS	UG/L	606202
	34628	SUSP	UG/L	606202
	34629	SED	UG/KG DRY WGT	606202
	34630	TIS	MG/KG WET WGT	606202
	79525	WASTE	MG/KG	606202

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1 -- Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

APPENDIX G (p.35)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
Di-n-octyl phthalate (1,2-Benzenedicarboxylic acid, dioctyl ester)	34596	TOT	UG/L	117840
	34597	DIS	UG/L	117840
	34598	SUS	UG/L	117840
	34599	SED	UG/KG DRY WGT	117840
	34600	TIS	MG/KG WET WGT	117840
	79600	WASTE	MG/KG	117840
1,4-Dioxane (1,4-Diethylene oxide) (Dioxane)	81582	TOT	UG/L	123911
	82388	WATR	MG/L	123911
Diphenylamine (Benzenamine, N-phenyl-)	77579	TOTAL	UG/L	122394
1,2-Diphenylhydrazine (Hydrazine, 1,2-diphenyl-)	34346	TOTW	UG/L	122667
	34347	DISS	UG/L	122667
	34348	SUSP	UG/L	122667
	34349	SED	UG/KG DRY WGT	122667
	34350	TIS	MG/KG WET WGT	122667
	79514	WASTE	MG/KG	122667
Di-n-propylnitrosamine (N-Nitroso-di-n-propylamine)	34428	TOTW	UG/L	621647
	34429	DISS	UG/L	621647
	34430	SUSP	UG/L	621647
	34431	SED	UG/KG DRY WGT	621647
	34432	TIS	MG/KG WET WGT	621647
	79668	WASTE	MG/KG	621647

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1 -- Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

APPENDIX G (p.36)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
Disulfoton (O,O-diethyl S-[2-(ethylthio) ethyl] phosphorodithioate)	81888	WHL WAT	UG/L	298044
	39010	WTR FPD	UG/L	298044
	39011	WTR FPD	UG/L	298044
	81887	SED	UG/KG DRY WGT	298044
2,4-Dithiobiuret (Thioimidodicarbonic diamide)	73566	TOTW	UG/L	541537
Endosulfan (5-Norbornene, 2,3-dimethanol, 1,4,5,6,7,7-hexachloro-, cyclic sulfite)	39388	WHL WTR SMPL	UG/L	115297
	82354	DISS.	UG/L	115297
	82355	SUSP.	UG/L	115297
	81759	FISH	MG/KG WET WGT	115297
	39389	MUD	UG/KG	115297
Endrin and metabolites (1,2,3,4,10,10-hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-endo,endo-1,4:5,8-dimethano-naphthalene, and metabolites)	39390	TOT	UG/L	72208
	39391	DIS	UG/L	72208
	39392	SUS FRAC	UG/L	72208
	39393	SED	UG/KG DRY WGT	72208
	39394	CLAY	UG/KG	72208
	39395	SLT-CLAY	UG/KG	72208
	39396	SAND	UG/KG	72208
	39397	SHELFISH	UG/KG WT	72208
	45567	ADIPOSE TIS	MG/KG	72208
	46276	SOIL	NG/G	72208
	61466	SLUDGE LIQ	UG/L	72208
	61467	SLUDGE SOL	UG/KG	72208
	34685	TIS	MG/KG WET WGT	72208

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1 -- Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

APPENDIX G (p.37)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
Endrin and metabolites (continued)	61468	SLUDGE TOT	UG/L	72208
	79619	WASTE	MG/KG	72208
	81717	SHEL	UG/KG DRY WGT	72208
	81846	FISH	MG/KG DRY WGT	72208
Ethyl carbamate (Urethan) (Carbamic acid, ethyl ester)	77077	TOTAL	UG/L	51796
Ethyl cyanide (propanenitrile)	77007	TOTAL	UG/L	107120
Ethylenebisdithiocarbamic acid, salts and esters (1,2-Ethanediylbiscarbamodithioic acid, salts, and esters)				
• Ethylenebisdithiocarbamic acid	73567	TOTW	UG/L	111546
• Ethylenebis(dithiocarbamic acid) disodium salt (NABAM)	38850	TOTW	UG/L	142596
	38851	DISS	UG/L	142596
	38852	SUSP	UG/L	142596
	38853	SED	UG/KG	142596
	38854	TIS	MG/KG	142596
• Ethylenebis(dithiocarbamic acid) zinc salt (ZINEB)	38912	TOTW	UG/L	12122677
	38913	DISS	UG/L	12122677
	38914	SUSP	UG/L	12122677
	38915	SED	UG/KG	12122677
	38916	TIS	MG/KG	12122677

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1 -- Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
Ethylenebisdithiocarbamic acid, salts and esters (continued)				
• Ethylenebis(dithiocarbamic acid) manganous salt (MANEB)	38835	TOTW	UG/L	12427382
	38836	DISS	UG/L	12427382
	38837	SUSP	UG/L	12427382
	38838	SED	UG/KG	12427382
	38839	TIS	MG/KG	12427382
Ethyleneimine (Aziridine)	73568			151564
Ethylene oxide (Oxirane)	76999	TOTAL	UG/L	75218
	81687	TOT	MG/L	75218
Ethylenethiourea (2-Imidazolidinethione)	73569	TOTW	UG/L	96457
Ethyl methacrylate (2-Propenoic acid, 2-methyl-, ethyl ester)	73570	TOTW	UG/L	97632
Ethyl methanesulfonate (Methanesulfonic acid, ethyl ester)	73571	TOTW	UG/L	62500
Fluoranthene (Benzo[j,k]fluorene)	34376	TOTW	UG/L	206440
	34377	DISS	UG/L	206440
	34378	SUSP	UG/L	206440
	34379	SED	UG/KG DRY WGT	206440
	34380	TIS	MG/KG WET WGT	206440
	79625	WASTE	MG/KG	206440

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1 -- Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

APPENDIX G (p.39)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
Fluorine	00953	TOTAL	UG/L	7782414
2-Fluoroacetamide (Acetamide, 2-fluoro-)	73572	TOTW	UG/L	640197
Fluoroacetic acid, sodium salt (Acetic acid, fluoro-, sodium salt)	73573	TOTW	UG/L	62748
Formaldehyde (Methylene oxide) (Methanal)	71880	WATER	MG/L	50000
	76995	TOTAL	UG/L	50000
Formic acid (Methanoic acid)	77006	TOTAL	UG/L	64186
Glycidylaldehyde (1-Propanol-2,3-epoxy)	73574	TOTW	UG/L	765344
Halomethane ("N.O.S.") [2]	code not appropriate for classes of chemicals			
Heptachlor (4,7-Methano-1H-indene,1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-)	39410	TOT	UG/L	76448
	46326	WHL SMPL	UG/L	76448
	39411	DIS	UG/L	76448
	39412	SUS	UG/L	76448
	39413	SED	UG/KG DRY WGT	76448
	39414	SHELFISH	UG/KG WT	76448
	45568	ADIPOSE TIS	MG/KG	76448
	46277	SOIL	NG/G	76448
	46280	SOIL	NG/G	76448
	61469	SLUDGE LIQ	UG/L	76448
	34687	TIS	MG/KG WET WGT	76448

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1 -- Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

2 -- ("N.O.S") indicates not otherwise specified in 40 CFR §261 Appendix VIII. Since this is a class of chemicals versus a single chemical no parameter code can be assigned in the STORET system.

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
Heptachlor (continued)				
	61470	SLUDGE SOL	UG/KG	76448
	61471	SLUDGE TOT	UG/L	76448
	79628	WASTE	MG/KG	76448
	81719	SHEL	UG/KG DRY WGT	76448
Heptachlor epoxide (alpha, beta, and gamma isomers) (4,7-Methano-1H-indene,1,4,5,6,7,8,8-heptachloro-2,3-epoxy-3a,4,7,7-tetrahydro-, alpha, beta, and gamma isomers)	39420	TOT	UG/L	1024573
	39421	DIS	UG/L	1024573
	39422	SUS	UG/L	1024573
	39423	SED	UG/KG DRY WGT	1024573
	39424	SHELFISH	UG/KG WT	1024573
	45569	ADIPOSE TIS	MG/KG	1024573
	46278	SOIL	NG/G	1024573
	61472	SLUDGE LIQ	UG/L	1024573
	61473	SLUDGE SOL	UG/KG	1024573
	61474	SLUDGE TOT	UG/L	1024573
	79629	WASTE	MG/KG	1024573
	81718	SHEL	UG/KG DRY WGT	1024573
	81766	ALGAE	UG/KG DRY WGT	1024573
	34686	TIS	MG/KG WET WGT	1024573
Hexachlorobenzene (Benzene, hexachloro-)	39700	TOT	UG/L	118741
	39039	WTR SMPL	UG/L	118741
	34401	DIS	UG/L	118741
	34402	SUS	UG/L	118741
	34688	TIS	MG/KG WET WGT	118741
	39701	SED	UG/KG DRY WGT	118741
	39703	FISH	UG/KG WWT	118741
	45574	ADIPOSE TIS	MG/KG	118741
	79633	WASTE	MG/KG	118741

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1 -- Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

Substance Name 1	Para. Code(s)	Medium	Units	Cas No.
Hexachlorobutadiene (1,3-Butadiene, 1,1,2,3,4,4-hexachloro-)	34391	TOTW	UG/L	87683
	34392	DISS.	UG/L	87683
	34393	SUSP.	UG/L	87683
	34394	BOT	UG/KG	87683
	34395	TIS	MG/KG WET WGT	87683
	39702	TOT	UG/L	87683
	39704	FISH	UG/KG WWT	87683
	39705	SED	UG/KG DRY WGT	87683
	79634	WASTE	MG/KG	87683
Hexachlorocyclohexane (all isomers) (Lindane and isomers)				
• (Benzenehexachloride $C_6H_6Cl_6$; BHC)	81283	TOT	UG/L	608731
	81323	SED	UG/KG DRY WGT	608731
	81826	FISH TISS	MG/KG WET WGT	608731
• (gamma isomer) (G-BHC (Lindane; BHC-Gamma Isomer)	39340	TOT.	UG/L	58899
	39782	WHL SMPL	UG/L	58899
	46322	+ WHL SMPL	UG/L	58899
	34265	DISS	UG/L	58899
	39341	DIS	UG/L	58899
	34266	SUSP	UG/L	58899
	39342	SUS	UG/L	58899
	39075	TIS	UG/G	58899
	39343	SED	DRYUG/KG	58899
	39781	ORGANISM TOT	UG/G	58899
	39783	MUD DRY	UG/KG	58899
	39784	SHELFISH	UG/KG WT	58899

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1 -- Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

APPENDIX G (p.42)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
Hexachlorocyclohexane (continued)				
• (gamma isomer) (G-BHC (Lindane; BHC-Gamma Isomer continued)	39785	TIS	MG/KG WET	58899
	39788	TISSUE FAT	UG/G	58899
	45563	ADIPOSE TIS	MG/KG	58899
	46291	NEG BHC SOIL	NG/G	58899
	46293	+ SOIL	NG/G	58899
	61490	SLUDGE LIQ	UG/L	58899
	61491	SLUDGE SOL	UG/KG	58899
	61492	SLUDGE TOT	UG/L	58899
	79627	WASTE	MG/KG	58899
	81720	SHEL	DRY WGTUG/KG	58899
	85216	EGGS	UG/G	58899
	85223	AIR	NG/M3	58899
	85230	PLANT	UG/G	58899
Hexachlorocyclopentadiene (1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-)	34386	TOTW	UG/L	77474
	34387	DISS	UG/L	77474
	34388	SUSP	UG/L	77474
	34389	SED	UG/KG DRY WGT	77474
	34390	TIS	MG/KG WET WGT	77474
Hexachloroethane (Ethane, 1,1,1,2,2,2-hexachloro-)	34396	TOTW	UG/L	67721
	34397	DISS	UG/L	67721
	34398	SUSP	UG/L	67721
	34399	SED	UG/KG DRY WGT	67721
	34400	TIS	MG/KG WET WGT	67721
	79636	WASTE	MG/KG	67721

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1 -- Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

APPENDIX G (p.43)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a-hexahydro-1,4:5,8-endo,endo-dimethanonaphthalene (Hexachlorohexahydro-endo, endo-dimethanonaphthalene) (Isodrin)	39430	WHL WTR SMPL	UG/L	465736
	39431	FLT FRAC	UG/L	465736
	39432	SUS FRAC	UG/L	465736
	39433	MUD	UG/KG	465736
	81654	FISH	MG/KG WET WGT	465736
Hexachlorophene (2,2'-Methylenebis(3,4, 6-trichlorophenol))	73575	TOTW	UG/L	70304
Hexachloropropene (1-Propene, 1,1,2,3,3, 3-hexachloro-)	73576	TOTW	UG/L	1888717
Hexaethyl tetraphosphate (Tetraphosphoric acid, hexaethyl ester)	73577	TOTW	UG/L	757584
Hydrazine (Diamine)	81313	TOT	MG/L	302012
Hyrocyanic acid (Hydrogen cyanide)	00142	TOTAL	UG/L	74908
Hydrofluoric acid (Hydrogen fluoride)	73578	TOTW	UG/L	7664393
Hydrogen sulfide (Sulfur hydride)	71875	WATER	MG/L	7783064
Hydroxydimethylarsine oxide (Cacodylic acid)	73579	TOTW	UG/L	75605

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1 -- Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

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APPENDIX G (p.44)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
Indeno (1,2,3-cd)pyrene (1,10-(1,2-phenylene)pyrene)	34403	TOTW	UG/L	193395
	34404	DISS	UG/L	193395
	34405	SUSP	UG/L	193395
	34406	SED	UG/KG DRY WGT	193395
	34407	TIS	MG/KG WET WGT	193395
	79644	WASTE	MG/KG	193395
Iodomethane (Methyl iodide)	77424	TOTAL	UG/L	74884
Iron dextran (Ferric dextran)	73580	TOTW	UG/L	9004664
Isocyanic acid, methyl ester (Methyl isocyanate)	73581	TOTW	UG/L	624839
Isobutyl alcohol (1-Propanol, 2-methyl-)	77033	TOTAL	UG/L	78831
Isosafrole (Benzene, 1,2-methylenedioxy-4-allyl-)	73582			120581
Kepone (Decachlorooctahydro-1,3,4-Methano-2H-cyclobuta[cd]pentalen-2-one)	39018	WTR Elec.Captr.	UG/L	143500
	61561	SLUDGE LIQ	UG/L	143500
	61562	SLUDGE SOL	UG/KG	143500
	61563	SLUDGE TOT	UG/L	143500
	81281	TOT	UG/L	143500
	81822	FISH	MG/KG WET WGT	143500
	81857	SED	UG/KG DRY WGT	143500
	82352	DISSOLVD	UG/L	143500
	82353	SUSPEND.	UG/L	143500

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1 -- Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

APPENDIX G (p.45)

Substance Name 1	Para. Code(s)	Medium	Units	Cas No.
Lasiocarpine (2-Butenoic acid, 2-methyl-, 7-[(2,3-dihydroxy-2-(1-methoxyethyl)-3-methyl-1-oxobutoxy)methyl]-2,3,5,7a-tetrahydro-1H-pyrrolizin-1-yl ester)	73583	TOIW	UG/L	303344
Lead and compounds ("N.O.S.")	01051	TOT	UG/L	7439921
	01049	DISS	UG/L	7439921
	46564	DISS.+	UG/L	7439921
	01114	TOT.REC.	UG/L	7439921
	01050	SUSP	UG/L	7439921
	81934	SUSPEND	UG/G	7439921
	46258	TOTAL	MG/KG	7439921
	46273	TOTAL	MG/KG	7439921
	01052	SED	MG/KG DRY WGT	7439921
	01164	TOTAL	LBS/DAY	7439921
	01259		LB/D/CFS	7439921
	46240	DTPA	MG/KG	7439921
	61502	SLUDGE LIQ	MG/L	7439921
	61503	SLUDGE SOL	MG/KG	7439921
	61504	SLUDGE TOT	MG/L	7439921
	71934	TOTAL FISH	UG/GM DWT	7439921
	71936	TIS	MG/KG WET WGT	7439921
	71949	EXTR	UG/L	7439921
	79649	WASTE	MG/KG	7439921
	81220	ILL-COLD	MG/L	7439921
	81633	SHELL	MG/KG DRY WGT	7439921
	81732	PLANKTON	MG/KG DRY	7439921

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1 -- Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
Lead and compounds (continued)	81739	ZOOPLANK	MG/KG DRY	7439921
	81748	SHELL	MG/KG WET	7439921
	81751	INTERST WAT	UG/L	7439921
	81778	AQ MC	MG/KG DRY WGT	7439921
	81786	EP AL	MG/KG DRY WGT	7439921
	81794	ANML	MG/KG DRY WGT	7439921
	82275	.031 MM,ST.DB.	UG/G	7439921
	82276	.062 MM ST.DB.	UG/G-PB	7439921
	82277	.125 MM ST.DB.	UG/G-PB	7439921
	82278	.25 MM ST.DB.	UG/G-PB	7439921
	82279	0.5 MM ST.DB.	UG/G-PB	7439921
	82280	1MM ST.DEB.	UG/G-PB	7439921
	82281	2MM ST.DEB.	UG/G=PB	7439921
	82282	4MM ST. DEB.	UG/G-PB	7439921
	82486	DIS DRY DEP	UG/KG	7439921
	82487	INSOL DD	UG/KG	7439921
	82488	TOT.REC.DDP	UG/KG	7439921
	85206	PB MUD	MG/GM-PB WET WGT	7439921
Lead acetate (Acetic acid, lead salt)	See "Lead"			
Lead phosphate (Phosphoric acid, lead salt)	73584	TOTW	UG/L	7446277
Lead subacetate (Lead, bis(acetato-O)tetrahydroxytri-)	73585	TOTW	UG/L	1335326
Maleic anhydride (2,5-Furandione)	78174	WATER	UG/L	108316
	78865	SED	UG/KG	108316
	79033	TIS	UG/KG	108316
Maleic hydrazide (1,2-Dihydro-3,6-pyridazinedione)	73586			123331
Malononitrile (Propanedinitrile)	73587	TOTW	UG/L	109773

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1 — Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

APPENDIX G (p.47)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
Melphalan (Alanine, 3-[p-bis(2-chloroethyl)amino]phenyl-,L-)	73588	TOTW	UG/L	148823
Mercury fulminate (Fulminic acid, mercury salt)	See "Mercury"			
Mercury and compounds ("N.O.S.")	71900	HG,TOTAL	UG/L	7439976
	71890	HG,DISS	UG/L	7439976
	71895	HG,SUSP	UG/L	7439976
	71901	TOT.REC.	UG/L	7439976
	46242	DTPA	MG/KG	7439976
	46259	TOTAL	MG/KG	7439976
	46272	TOTAL	MG/KG	7439976
	01221	DIS DRY D	UG/KG	7439976
	01222	INS DRY D	UG/KG	7439976
	01223	TOT DRY D	UG/KG	7439976
	01260		LB/D/CFS	7439976
	61499	SLUDGE LIQ	MG/L	7439976
	61500	SLUDGE SOL	MG/KG	7439976
	61501	SLUDGE TOT	MG/L	7439976
	71920	SED-PULP	MG/KG WT	7439976
	71921	SED	MG/KG DRY WGT	7439976
	71930	TIS	MG/KG WET WGT	7439976
	71933	TOTAL FISH	UG/GM DWT	7439976
	71935	FISH	PPM-WET	7439976
	81725	SLUDG	MG/L DRY WGT	7439976
	81770	SHELL	MG/KG WET WGT	7439976
	81856	PLANK	MG/KG WET WGT	7439976
	81931	SUSPEND	UG/G	7439976
	85013	TOTAL	#/DAY	7439976

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[1] -- Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

APPENDIX G (p.48)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
Methacrylonitrile (2-Propenenitrile, 2-methyl-)	81593	TOT	UG/L	126987
Methanethiol (Thiomethanol) (Methyl mercaptian)	00143	TOTAL	UG/L	74931
	78615	SED	UG/KG	74931
Methapyrilene (Pyridine, 2-[(2-dimethylamino)ethyl]-2-thenylamino-)	73589	TOTW	UG/L	91805
Metholmyl (Acetimidic acid, N-[(methylcarbamoyl)oxy]thio-, methyl ester)	39051	WH.WATER	UG/L	16752775
Methoxychlor (Ethane, 1,1,1-trichloro-2-2'-bis(p-methoxyphenyl)-)	39480	WHL SMPL	UG/L	72435
	39478	WTR DISS	UG/L	72435
	82350	DIS	UG/L	72435
	39479	WTR SUSP	UG/L	72435
	82351	SUSP.	UG/L	72435
	39482	CHLOR-FISH	UG/KG	72435
	46288	SOIL	NG/G	72435
	61484	SLUDGE LIQ	UG/L	72435
	61485	SLUDGE SOL	UG/KG	72435
	61486	SLUDGE TOT	UG/L	72435
	81644	FISH	UG/G WET WGT	72435
	81721	SHEL	UG/KG DRY WGT	72435
	39481	MUD DRY	UG/KG	72435
2-Methylaziridine (1,2-Propylenimine)	73590	TOTW	UG/L	75558

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1 — Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

APPENDIX G (p.49)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
3-Methylcholanthrene (Benz[j]aceanthrylene, 1,2-dihydro-3-methyl-)	73591	TOTW	UG/L	56495
Methyl chlorocarbonate (Carbonochloridic acid, methyl ester)	73592	TOTW	UG/L	79221
4,4'-Methylenebis(2-chloroaniline) (Benzenamine, 4,4'-methylenebis-(2-chloro-) (MOCA -4,4-Methylenebis-2-chloraniline)	78123	WHL WATR	UG/L	101144
Methyl ethyl ketone (MEK)(2-Butanone)	81595	TOT	UG/L	78933
	75078	SED	UG/KG DRY	78933
	76050	TIS	MG/KG WET	78933
	79658	WASTE	MG/KG	78933
Methyl hydrazine (Hydrazine, methyl-)	73593	TOTW	UG/L	60344
2-Methyllactonitrile (Propanenitrile, 2-hydroxy-2-methyl-)	73594	TOTW	UG/L	75865
Methyl methacrylate (2-Propenoic acid, 2-methyl-, methyl ester)	81597	TOT	UG/L	80626
Methyl methanesulfonate (Methanesulfonic acid, methyl ester)	73595	TOTW	UG/L	66273

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1 -- Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

APPENDIX G (p.50)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
2-Methyl-2-(methylthio)propionaldehyde-o-methylcarbonyl) oxime (Propanal, 2-methyl-2-(methylthio)-, O-[(methylamino)carbonyl]oxime) (Aldicarb)	39053 81895	WH.WATER SED	UG/L UG/KG DRY WGT	116063 116063
N-Methyl-N'-nitro-N-nitrosoguanidine (Guanidine, N-nitroso-N-methyl-N'-nitro-)	73596	TOTW	UG/L	70257
Methyl parathion (O,O-dimethyl O-(4-nitrophenyl) phosphorothioate)	39600 39601 39602 39603 46301 81809	WHL WTR SMPL MUD FIL FRAC SUS FRAC SOIL FISH	UG/L UG/KG UG/L UG/L NG/G MG/KG WET WGT	298000 298000 298000 298000 298000 298000
Methylthiouracil (4-1H-Pyrimidinone, 2,3-dihydro-6-methyl-2-thioxo-)	73597	TOTW	UG/L	56042
Mustard gas (Sulfide, bis(2-chloroethyl)-)	73598	TOTW	UG/L	505602
Naphthalene	34696 34443 34444 34445 34446 79670	TOTW DISS SUSP SED TIS WASTE	UG/L UG/L UG/L UG/KG DRY WGT MG/KG WET WGT MG/KG	91203 91203 91203 91203 91203 91203
1,4-Naphthoquinone (1,4-Naphthalenedione)	73599	TOTW	UG/L	130154

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1 — Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

APPENDIX G (p.51)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
1-Naphthylamine (alpha-Naphthylamine)	73600	TOTW	UG/L	134327
2-Naphthylamine (beta-Naphthylamine)	73601	TOTW	UG/L	91598
1-Naphthyl-2-thiourea (Thiourea, 1-naphthalenyl-)	73602	TOTW	UG/L	86884
Nickel and compounds ("N.O.S.")	01067	TOTAL	UG/L	7440020
	00161	WHL WAT	KG/BATCH	7440020
	01065	DISS	UG/L	7440020
	01066	SUSP	UG/L	7440020
	01074	TOT.REC.	UG/L	7440020
	01068	SED	MG/KG DRY WGT	7440020
	01069	TIS	MG/KG WET WGT	7440020
	01224	DIS DRY D	UG/KG	7440020
	01225	INS DRY D	UG/KG	7440020
	01226	TOT DRY D	UG/KG	7440020
	01261		LB/D/CFS	7440020
	46243	DTPA	MG/KG	7440020
	46270	TOTAL	MG/KG	7440020
	46307	TOTAL	MG/KG	7440020
	61514	SLUDGE LIQ	MG/L	7440020
	61515	SLUDGE SOL	MG/KG	7440020
	61516	SLUDGE TOT	MG/L	7440020
	79671	WASTE	MG/KG	7440020
	81222	ILL-COLD	MG/L	7440020
	81628	SHELL	MG/KG DRY WGT	7440020

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1 -- Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

APPENDIX G (p.52)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
Nickel and compounds (continued)	81724	FISH	MG/KG DRY WGT	7440020
	81731	PLANKTON	MG/KG DRY	7440020
	81738	ZOOPLANK	MG/KG DRY	7440020
	81752	INTERST WAT	UG/L	7440020
	81777	AQ MC	MG/KG DRY WGT	7440020
	81785	EP AL	MG/KG DRY WGT	7440020
	81793	ANML	MG/KG DRY WGT	7440020
	81811	SHELL	MG/KG WET WGT	7440020
	85010	TOTAL	#/DAY	7440020
Nickel carbonyl (Nickel tetracarbonyl)	73603			13463393
Nickel cyanide (Nickel (II) cyanide)	See "Nickel"; see "Cyanide"			
Nicotine and salts (Pyridine, (S)-3-(1-methyl-2-pyrrolidinyl)-, and salts)	77536	TOTAL	UG/L	54115
Nitric oxide (Nitrogen (II) oxide)	73604	TOTW	UG/L	10102439
p-Nitroaniline (Benzenamine, 4-nitro-)	73605	TOTW	UG/L	100016
Nitrobenzene (Benzene, nitro-)	34447	TOTW	UG/L	98953
	34448	DISS	UG/L	98953
	34449	SUSP	UG/L	98953
	34450	SED	UG/KG DRY WGT	98953
	34451	TIS	MG/KG WET WGT	98953
	79672	WASTE	MG/KG	98953

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[1] -- Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

APPENDIX G (p.53)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
Nitrogen dioxide (Nitrogen (IV) oxide)	46119	CHRISTIE	PPM	10102440
	46120	CHEM	PPM	10102440
Nitrogen mustard and hydrochloride salt (Ethanamine, 2-chloro-, N-(2-chloroethyl)-N-methyl-, and hydrochloride salt)	73606	TOTW	UG/L	51752
Nitrogen mustard N-Oxide and hydrochloride salt (Ethanamine, 2-chloro-, N-(2-chloroethyl)-N-methyl-, and hydrochloride salt)	73607	TOTW	UG/L	302705
Nitroglycerine (1,2,3-Propanetriol, trinitrate)	34101	WTR SMPL	MG/L	55630
	77758	TOTAL	UG/L	55630
4-Nitrophenol (Phenol, 4-nitro-)	34646	TOTW	UG/L	100027
	34647	DISS	UG/L	100027
	34648	SUSP	UG/L	100027
	34649	SED	UG/KG DRY WGT	100027
	34650	TIS	MG/KG WET WGT	100027
	79536	WAS	MG/KG	100027
4-Nitroquinoline-1-oxide (Quinoline, 4-nitro-1-oxide-)	73608	TOTW	UG/L	56575
Nitrosamine ("N.O.S.") [2]	Code not appropriate for classes of chemicals			
N-Nitrosodi-n-butylamine (1-Butanamine, N-butyl-N-nitroso-)	73609	TOTW	UG/L	924163

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1 -- Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

2 -- ("N.O.S") indicates not otherwise specified in 40 CFR §261 Appendix VIII. Since this is a class of chemicals versus a single chemical no parameter code can be assigned in the STORET system.

APPENDIX G (p.54)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
N-Nitrosodiethanolamine (Ethanol, 2,2'-(nitrosoimino)bis-)	73610	TOTW	UG/L	1116547
N-Nitrosodiethylamine (Ethanamine, N-ethyl-N-nitroso-)	73611	TOTW	UG/L	55185
N-Nitrosodimethylamine (Dimethylnitrosamine)	34438	TOTW	UG/L	62759
	34439	DISS	UG/L	62759
	34440	SUSP	UG/L	62759
	34441	SED	UG/KG DRY WGT	62759
	34442	TIS	MG/KG WET WGT	62759
N-Nitroso-N-ethylurea (Carbamide, N-ethyl-N-nitroso-)	73612	TOTW	UG/L	759739
N-Nitrosomethylethylamine (Ethanamine, N-methyl-N-nitroso-)	73613	TOTW	UG/L	10595956
N-Nitroso-N-methylurea (Carbamide, N-methyl-N-nitroso-)	73614	TOTW	UG/L	684935
N-Nitroso-N-methylurethane (Carbamic acid, methylnitroso-, ethyl ester)	73615	TOTW	UG/L	615532
N-Nitrosomethylvinylamine (Ethenamine, N-methyl-N-nitroso-)	73616	TOTW	UG/L	4549400
N-Nitrosomorpholine (Morpholine,N-nitroso-)	73617	TOTW	UG/L	59892

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1 -- Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

APPENDIX G (p.55)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
N-Nitrosonornicotine (Nornicotine, N-nitroso-)	73618	TOTW	UG/L	16543558
N-Nitrosopiperidine (Pyridine, hexahydro-, N-nitroso-)	73619	TOTW	UG/L	100754
Nitrosopyrrolidine (Pyrrole, tetrahydro-, N-nitroso-)	73620	TOTW	UG/L	930552
N-Nitrososarcosine (Sarcosine, N-nitroso-)	73621	TOTW	UG/L	13256229
5-Nitro-o-toluidine (Benzenamine, 2-methyl-5-nitro-)	73622	TOTW	UG/L	99558
Octamethylpyrophosphoramide (Diphosphoramide, octamethyl-)	73623	TOTW	UG/L	152169
Osmium tetroxide (Osmium (VIII) oxide)	73624	TOTW	UG/L	20816120
7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid (Endothal)	73625	TOTW	UG/L	145733
Paraldehyde (1,3,5-Trioxane, 2,4,6-trimethyl-)	77322	TOTAL	UG/L	123637

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1 — Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

APPENDIX G (p.56)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
Parathion (Phosphorothioic acid, O,O-Oiethyl O-(p-nitrophenyl)ester)	39015	WTR Flame ionizn	UG/L	56382
	39540	WHL WTR SMPL	UG/L	56382
	46315	WHL SMPL	UG/L	56382
	49011	WHL SMPL (Unkns)	UG/L	56382
	39542	FIL FRAC	UG/L	56382
	39543	SUS FRAC	UG/L	56382
	46302	SOIL	NG/G	56382
	39541	MUD	UG/KG	56382
	81810	FISH	MG/KG WET WGT	56382
Pentachlorobenzene (Benzene, pentachloro-)	77793	TOTAL	UG/L	608935
	39118	SED	UG/KG	608935
Pentachloroethane (Ethane, pentachloro-)	81501	TOT	UG/L	76017
Pentachloronitrobenzene (PCNB) (Benzene, pentachloronitro-) (Terrachloro, pentachloronitrobenzene)	81316	TOT	UG/L	82688
	38526	DISS	UG/L	82688
	38527	SUSP	UG/L	82688
	39029	WTR SMP	UG/L	82688
	46333	TIS	WET MG/KG	82688
	81808	SED	UG/KG DRY WGT	82688
Pentachlorophenol (Phenol, pentachloro-) (PCP)	39032	TOT	UG/L	87865
	34459	DIS	UG/L	87865
	34460	SUS	UG/L	87865
	39060	TIS	MG/KG WET WGT	87865
	39061	SED	UG/KG DRY WGT	87865
	79690	WASTE	MG/KG	87865

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1 -- Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

APPENDIX G (p.57)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
Phenacetin (Acetamide, N-(4-ethoxyphenyl)-)	73626	TOTW	UG/L	62442
Phenol(Benzene, hydroxy-)	34694	TOT	UG/L	108952
	34466	DISS	UG/L	108952
	34467	SUSP	UG/L	108952
	34468	TIS	MG/KG WET WGT	108952
	79693	WASTE	MG/KG	108952
	34695	SED	UG/KG DRY WGT	108952
Phenylenediamine(Benzenediamine)				
• (O-Phenylenediamene)	77145	TOTAL	UG/L	95545
• M-Phenylenediamene	73627	TOTW	UG/L	108452
• P-Phenylenediamene	73628	TOTW	UG/L	106503
Phenylmercury acetate (Mercury, acetato-phenyl-)	73629	TOTW	UG/L	62384
N-Phenylthiourea (Thiourea, phenyl-)	73630	TOTW	UG/L	103855
Phosgene (Carbonyl chloride)	73631	TOTW	UG/L	75445
Phosphine (Hydrogen phosphide)	73632	TOTW	UG/L	7803512

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1 -- Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

APPENDIX G (p.58)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
Phosphorodithioic acid, O,O-diethyl S-[(ethylthio)methyl]ester (Phorate)	38870	DISS	UG/L	298022
	38871	SUSP	UG/L	298022
	39023	WTR Flame ionizn	UG/L	298022
	39156	TISSUE	MG/KG	298022
	46304	SOIL	NG/G	298022
	46313	WHL SMPL	UG/L	298022
	81412	SED	UG/KG DRY WGT	298022
Phosphorothioic acid, O,O-dimethyl O-[p-(dimethylamino)sulfonyl)phenyl]ester (Famphur)	38462	TOTW	UG/L	52857
	38463	DISS	UG/L	52857
	38464	SUSP	UG/L	52857
	38465	SED	UG/KG	52857
	38466	TIS	MG/KG	52857
Phthalic acid esters ("N.O.S.") [2] (Benzene, 1,2-dicarboxylic acid, esters ("N.O.S.") [2]	code not appropriate for classes of chemicals			
Phthalic anhydride (1,2-Benzenedicarboxylic acid anhydride)	75523	SED	UG/KG DRY WGT	85449
	76495	TISS	MG/KG WET WGT	85449
	77453	TOTAL	UG/L	85449
2-Picoline (Pyridine, 2-methyl-)	77088	TOTAL	UG/L	109068

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[1] — Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

[2] — ("N.O.S") indicates not otherwise specified in 40 CFR S261 Appendix VIII. Since this is a class of chemicals versus a single chemical no parameter code can be assigned in the STORET system.

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
Polychlorinated biphenyl ("N.O.S.")	39516	WHL WTR SMPL	UG/L	12767792
	39517	FLT FRAC	UG/L	12767792
	39518	SUS FRAC	UG/L	12767792
	39519	MUD	UG/KG	12767792
	45570	ADIPOSE TIS	MG/KG	12767792
	39515	FISH	MG/KG	12767792
Potassium cyanide	73633	TOTW	UG/L	151508
Potassium silver cyanide (Argentate(1-), dicyano-, potassium)	73634	TOTW	UG/L	506616
Pronamide (3,5-Dichloro-N-(1,1-dimethyl-2-propynyl)benzamide)	73635	TOTW	UG/L	23950585
1,3-Propane sultone (1,2-Oxathiolane, 2,2-dioxide)	73636	TOTW	UG/L	1120714
n-Propylamine (1-Propanamine)	77013	TOTAL	UG/L	107108
Propylthiouracil (Undecamethylenediamine, N,N'-bis(2-chlorobenzyl)-, dihydrochloride)	73637	TOTW	UG/L	51552
2-Propyn-1-ol(Propargyl alcohol)	73638	TOTW	UG/L	107197

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[1] -- Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

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APPENDIX G (p.60)

Substance Name 1	Para. Code(s)	Medium	Units	Cas No.
Pyridine	77045	TOTAL	UG/L	110861
Reserpine (Yohimban-16-carboxylic acid, 11,17-dimethoxy-18-[(3,4,5-trimethoxybenzoyl)oxy]-, methyl ester)	73639	TOTW	UG/L	50555
Resorcinol (1,3-Benzenediol)	77164	TOTAL	UG/L	108463
Saccharin and salts(1,2-Benzoisothiazolin-3-one, 1,1-dioxide, and salts)	77638	TOT	UG/L	80172
Safrole (Benzene, 1,2-methylenedioxy-4-allyl-)	77545	TOTAL	UG/L	94597
Selenious acid (Selenium dioxide)	See "Selenium"			
Selenium and compounds ("N.O.S.") 2	01147	TOT	UG/L	7782492
	01145	DISS	UG/L	7782492
	22675	DISS ORG	UG/L	7782492
	22676	HEX DISS	UG/L	7782492
	22677	TET DISS	UG/L	7782492
	00981	TOT REC	UG/L	7782492
	01138	WATER	LBS/DAY	7782492
	01146	SUSP	UG/L	7782492
	01148	SED	MG/KG DRY WGT	7782492
	01149	TIS	MG/KG WET WGT	7782492
	01227	DIS DRY D	UG/KG	7782492

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1 -- Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

2 -- ("N.O.S") indicates not otherwise specified in 40 CFR §261 Appendix VIII. Since this is a class of chemicals versus a single chemical no parameter code can be assigned in the STORET system.

APPENDIX G (p.61)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
Selenium and compounds (continued)	01228	INS DRY D	UG/KG	7782492
	01229	TOT DRY D	UG/KG	7782492
	61517	SLUDGE LIQ	MG/L	7782492
	61518	SLUDGE SOL	MG/KG	7782492
	61519	SLUDGE TOT	MG/L	7782492
	79703	WAS	MG/KG	7782492
	81830	SHELL	MG/KG WET WGT	7782492
Selenium sulfide (Sulfur selenide)	See "Selenium"; see "Sulfide"			
Selenourea (Carbamimidoselenoic acid)	73640	TOTW	UG/L	630104
Silver and compounds ("N.O.S.")	01077	TOT	UG/L	7440224
	00162	WHL WAT	KG/BATCH	7440224
	01075	DISS	UG/L	7440224
	46566	DISS .+	UG/L	7440224
	01076	SUSP	UG/L	7440224
	01079	TOT.REC.	UG/L	7440224
	01078	SED	MG/KG DRY WGT	7440224
	01230	DIS DRY D	UG/KG	7440224
	01231	INS DRY D	UG/KG	7440224
	01232	TOT DRY D	UG/KG	7440224
	01263		LB/D/CFS	7440224
	34474	TIS	MG/KG WET WGT	7440224
	79704	WASTE	MG/KG	7440224
	81223	ILL-COLD	MG/L	7440224
	81635	SHELL	MG/KG DRY WGT	7440224

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APPENDIX G (p.62)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
Silver and compounds (continued)	81642	AG WATER	LBS/DAY	7440224
	81727	PLANKTON	MG/KG DRY	7440224
	81734	ZOOPLANK	MG/KG DRY	7440224
	81742	FISH	MG/KG WET WGT	7440224
	81771	AQ MC	MG/KG DRY WGT	7440224
	81779	EP AL	MG/KG DRY WGT	7440224
	81787	ANML	MG/KG DRY WGT	7440224
	81831	SHELL	MG/KG WET WGT	7440224
Silver cyanide	See "Silver"; see "Cyanide"			
Sodium cyanide	See "Cyanide"			
Streptozotocin (D-Glucopyranose, 2-deoxy-2-(3-methyl-3-nitrosoureido)-)	73641	TOTW	UG/L	18883664
Strontium sulfide	See "Sulfide"			
Strychnine and salts (Strychnidin-10-one, and salts)	73642	TOTW	UG/L	57249
Sulfide (NOT IN 40 CFR §261 APPX. VIII)	00745	TOTAL	MG/L	18496258
	00746	DISS	MG/L	18496258
	81612	SED	MG/G	18496258
	00747	BOT DEP	MG/KG	18496258
	81621	WHL WTR SMPL	LBS/DAY	18496258

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1 -- Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

APPENDIX G (p.63)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
1,2,4,5-Tetrachlorobenzene (Benzene, 1,2,4,5-tetrachloro-)	77734	TOTAL	UG/L	95943
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) (Dibenzo-p-dioxin,2,3,7,8-tetrachloro-)	34675	TOTW	UG/L	1746016
	34676	DISS	UG/L	1746016
	34677	SUSP	UG/L	1746016
	34678	SED	UG/KG DRY WGT	1746016
	34679	TIS	MG/KG WET WGT	1746016
Tetrachloroethane ("N.O.S.") [2] (Ethane, tetrachloro- ("N.O.S.") [2]	code not appropriate for classes of chemicals			
1,1,1,2-Tetrachlorethane (Ethane, 1,1,1,2-tetrachloro-)	77562	TOTAL	UG/L	630206
1,1,2,2-Tetrachlorethane (Ethane, 1,1,2,2-tetrachloro-)	34516	TOTW	UG/L	79345
	34517	DISS	UG/L	79345
	34518	SUSP	UG/L	79345
	34519	SED	UG/KG DRY WGT	79345
	34520	TIS	MG/KG WET WGT	79345
	79501	WAS	MG/KG	79345
	82168	IN AIR	NG/CC	79345

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1 -- Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

2 -- ("N.O.S") indicates not otherwise specified in 40 CFR §261 Appendix VIII. Since this is a class of chemicals versus a single chemical no parameter code can be assigned in the STORET system.

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
Tetrachloromethane (Carbon tetrachloride)	32102	WHL WTR	UG/L	56235
	32260	EXTRACTABLES	MG/L	56235
	34297	DISS	UG/L	56235
	34298	SUSP	UG/L	56235
	34299	SED	UG/KG DRY WGT	56235
	34300	TIS	MG/KG WET WGT	56235
	82140	IN AIR	NG/CC	56235
	79582	WASTE	MG/KG	56325
2,3,4,6-Tetrachlorophenol (Phenol, 2,3,4,6-tetrachloro-)	77770	TOTAL	UG/L	58902
Tetraethyldithiopyrophosphate (Dithiopyrophosphoric acid, tetraethyl-ester) (O,O,O,O-Tetra ethyl dithiopyrophos; Sulfotepp;Bladfume)	77871	TOTAL	UG/L	3689245
	82201	IN WTR	UG/L	3689245
Tetraethyl lead (Plumbane, tetraethyl-)	73643	TOTW	UG/L	78002
Tetraethylpyrophosphate (Pyrophosphoric acide, tetraethyl ester) (TEPP)	39620	WHL WTR SMPL	UG/L	107493
Tetranitromethane (Methane, tetranitro-)	73644	TOTW	UG/L	509148
Thallium and compounds ("N.O.S.")	01059	TOTAL	UG/L	7440280
	01057	DISS	UG/L	7440280
	01058	SUSP	UG/L	7440280

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1 -- Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

APPENDIX G (p.65)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
Thallium and compounds (continued)	00982	TOT REC	UG/L	7440280
	01073	TIS	MG/KG WET	7440280
	34480	SED	MG/KG DRY WGT	7440280
	71944	TOTAL FISH	UG/GM DWT	7440280
	79712	WASTE	MG/KG	7440280
Thallic oxide (Thallium (III) oxide)	See "Thallium"			
Thallium (I) acetate (Acetic acid, thallium (I) salt)	See "Thallium"			
Thallium (I) carbonate (Carbonic acid, dithallium (I) salt)	See "Thallium"			
Thallium (I) chloride	See "Thallium"			
Thallium (I) nitrate (Nitric acid, thallium (I) salt)	See "Thallium"			
Thallium selenite	See "Thallium"; see "Selenium"			
Thallium (I) sulfate (Sulfuric acid, thallium (I) salt)	See "Thallium"			
Thioacetamide (Ethanethioamide)	73645	TOTW	UG/L	62555
Thiosemicarbazide (Hydrazinecarbothioamide)	73646	TOTW	UG/L	79196

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[1] — Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

APPENDIX G (p.66)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
Thiourea (Carbamide thio-)	73647	TOTW	UG/L	62566
Thiuram (Bis(dimethylthiocarbamoyl) disulfide)	38569	TOTW	UG/L	137268
	38570	DISS	UG/L	137268
	38571	SUSP	UG/L	137268
	38572	SED	UG/KG	137268
	38573	TIS	MG/KG	137268
Toluene (Benzene, methyl-)	34010	TOT	UG/L	108883
	34481	DISS	UG/L	108883
	34482	SUSP	UG/L	108883
	34483	SED	UG/KG DRY WGT	108883
	34484	TIS	MG/KG WET WGT	108883
	78131	WHL HOH VOL	UG/L	108883
	78752	SED	UG/KG	108883
	79715	WASTE	MG/KG	108883
	82155	IN AIR	NG/CC	108883
Toluenediamine (Diaminotoluene)	73648	TOTW	UG/L	25376458
o-Toluidine hydrochloride (Benzenamine, 2-methyl-, hydrochloride)	73649	TOTW	UG/L	636215
Tolylene diisocyanate (Benzene, 1,3-diisocyanatomethyl-)	73650	TOTW	UG/L	26471625

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APPENDIX G (p.67)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
Toxaphene (Camphene, octachloro-)	39400	TOT	UG/L	8001352
	39401	DIS	UG/L	8001352
	39402	SUS	UG/L	8001352
	39403	SED	UG/KG DRY WGT	8001352
	39407	FISH	UG/KG WET	8001352
	61558	SLUDGE LIQ	UG/L	8001352
	61559	SLUDGE SOL	UG/KG	8001352
	61560	SLUDGE TOT	UG/L	8001352
	79717	WASTE	MG/KG	8001352
	81723	SHEL	UG/KG DRY WGT	8001352
	81864	SHELL	UG/KG WET WGT	8001352
	34691	TIS	MG/KG WET WGT	8001352
Tribromomethane (Bromoform)	32104	WHL-WTR	UG/L	75252
	34288	DISS	UG/L	75252
	34289	SUSP	UG/L	75252
	34290	SED	UG/KG DRY WGT	75252
	34291	TIS	MG/KG WET WGT	75252
	79563	WAS	MG/KG	75252
	82151	IN AIR	NG/CC	75252

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1 -- Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

APPENDIX G (p.68)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
1,2,4-Trichlorobenzene (Benzene, 1,2,4-trichloro-)	34551	TOTW	UG/L	120821
	34552	DISS	UG/L	120821
	34553	SUSP	UG/L	120821
	34554	SED	UG/KG DRY WGT	120821
	34555	TIS	MG/KG WET WGT	120821
	79507	WASTE	MG/KG	120821
1,1,1-Trichloroethane (Methyl chloroform)	34506	TOTW	UG/L	71556
	34507	DISS	UG/L	71556
	34508	SUSP	UG/L	71556
	34509	SED	UG/KG DRY WGT	71556
	34510	TIS	MG/KG WET WGT	71556
	79500	WAS	MG/KG	71556
	82143	IN AIR	NG/CC	71556
1,1,2-Trichloroethane (Ethane, 1,1,2-trichloro-)	34511	TOTW	UG/L	79005
	34512	DISS	UG/L	79005
	34513	SUSP	UG/L	79005
	34514	SED	UG/KG DRY WGT	79005
	34515	TIS	MG/KG WET WGT	79005
	79503	WASTE	MG/KG	79005
	82145	IN AIR	NG/CC	79005

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1 -- Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

APPENDIX G (p.69)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
Trichloroethene (Trichloroethylene)	34485	DISS	UG/L	79016
	34486	SUSP	UG/L	79016
	34487	SED	UG/KG DRY WGT	79016
	34692	TIS	MG/KG WET WGT	79016
	39180	TOT	UG/L	79016
	34555	FISH	UGK	79016
	79718	WASTE	MG/KG	79016
	82156	IN AIR	NG/CC	79016
Trichloromethanethiol (Methanethiol,	73561	TOTW	UG/L	75707
Trichloromonoflromethane, (Methane, trichlorofluoro-) (trichlorofluoromethane)	34488	TOTW	UG/L	75694
	34489	DISS	UG/L	75694
	34490	SUSP	UG/KG DRY WGT	75694
	34491	SED	MG/KG WET WGT	75694
	79719	WASTE	MG/KG	75694
	82154	IN AIR	NG/CC	75694
2,4,5-Trichlorophenol (Phenol, 2,4,5-trichloro-)	77687	TOTAL	UG/L	95954
2,4,6-Trichlorophenol (Phenol, 2,4,6-trichloro-)	34621	TOTW	UG/L	88062
	34622	DISS	UG/L	88062
	34623	SUSP	UG/L	88062
	34624	SED	UG/KG DRY WGT	88062

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1 — Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

APPENDIX G (p.70)

Substance Name 1	Para. Code(s)	Medium	Units	Cas No.
2,4,6-Trichlorophenol (continued) trichloro-)	34625	TIS	MG/KG WET WGT	88062
	79520	WASTE	MG/KG	88062
2,4,5-Trichlorophenoxyacetic acid (2,4,5-T) (Acetic acid, 2,4,5-trichlorophenoxy-)	39740	WHL SMPL	UG/L	93765
	39741	MUD	UG/KG	93765
	39742	FLT FRAC	UG/L	93765
	39743	SUS FRAC	UG/L	93765
	39744	FISH WWT	UG/KG	93765
2,4,5-Trichlorophenoxypropionic acid (2,4,5-TP) (Silvex) (Propionoic acid, 2-(2,4,5-trichlorophenoxy)-1 (2,4,5-TP includes acids and salts)	39054	WTR SMPL	UG/L	93721
	39760	WHL SMPL	UG/L	93721
	39761	MUD	UG/KG	93721
	39762	FLT FRAC	UG/L	93721
	39763	SUS FRAC	UG/L	93721
Trichloropropane ("N.O.S.") 2	code not appropriate for classes of chemicals			
1,2,3-Trichloropropane (Propane, 1,2,3-trichloro-)	77443	TOTAL	UG/L	96184
O,O,O-Triethyl phosphorothioate (Phosphorothioic acid, O,O,O-triethl ester)	73652	TOTW	UG/L	126681
sym-Trinitrobenzene (Benzene, 1,3,5-trinitro-)	73653	TOTW	UG/L	99354
Tris(1-azridinyl) phosphine sulfide (Phosphine sulfide, tris(1-aziridinyl-)	73654	TOTW	UG/L	52244

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1 -- Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

2 -- ("N.O.S") indicates not otherwise specified in 40 CFR §261 Appendix VIII. Since this is a class of chemicals versus a single chemical no parameter code can be assigned in the STORET system.

APPENDIX G (p.71)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
Tris(2,3-dibromopropyl) phosphate (1-Propanol, 2,3-dibromo-, phosphate)	73655	TOTW	UG/L	126727
Trypan blue (2,7-Naphthalenedisulfonic acid, 3,3'-[(3,3'-dimethyl(1,1'-biphenyl)-4,4'-diyl)bis(azo)]bis(5-amino-4-hydroxy-, tetrasodium salt)	73656	TOTW	UG/L	72571
Uracil mustard (Uracil 5-[bis(2-chloroethyl)amino]-)	73657	TOTW	UG/L	66751
Vanadic acid, ammonium salt (ammonium vanadate)	73658	TOTW	UG/L	7803556
Vanadium pentoxide (Vanadium (V) oxide)	73659	TOTW	UG/L	1314621
Vinyl chloride (Ethene, chloro-)	39175	TOT	UG/L	75014
	34493	DISS	UG/L	75014
	34494	SUSP	UG/L	75014
	34495	SED	UG/KG DRY WGT	75014
	34693	TIS	MG/KG WET WGT	75014
	39176	FISH TIS	UG/KG	75014
	79723	WASTE	MG/KG	75014
	82157	IN AIR	NG/CC	75014
Zinc cyanide	See "Cyanide"			

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1 -- Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

APPENDIX G (p.72)

Substance Name [1]	Para. Code(s)	Medium	Units	Cas No.
Zinc phosphide	73660	TOTW	UG/L	1314847

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[1] -- Appendix VIII pseudonym in parens, STORET para. name (underlined and in parens) if significantly different from Appendix VIII names.

APPENDIX H

Examples of the Water Quality Analysis Branch Conversational Procedure WQAB PARM

APPENDIX H

Examples of the Water Quality Analysis Branch Conversational Procedure WQAB PARM

The procedure WQAB enables a user to obtain STORET parameter information in several different formats. This appendix contains examples of 2 out of the 11 available formats.

Below is a sample retrieval request for a list of STORET parameter codes printed in numerical order.

```
wqab parm
 ATTEMPTING ENTRY TO WATER QUALITY ANALYSIS
 BRANCH SOFTWARE PACKAGE - PARM

 'SKIP DESCRIPTIVE NARRATIVE?  'Y(ES)' OR 'N(O)' ?
y
 *******************************************
 *   1) STORET PARAMETER
 *   2) CASN#                                *
 *   3) GROUP/MEDIA                          *
 *   4) BATCH (REPORTS FOR ALL PARAMETERS)*
 *   5) END
 *******************************************
 OPTION?
4
 ******************************
 *  TYPE OF PRINTED OUTPUT  *
 ******************************
 *   1) LASER (8 X 11)       *
 *   2) STANDARD (15 X 11)   *
 ******************************


 SELECT OPTION?  1
 DO YOU WANT TO CHANGE YOUR SELECT OPTION? '(Y)ES/(N)O' n

 H(EADQUARTERS), R(EGION) OR S(TATE) USER) ? 'H', R'  OR  'S'  h
 ENTER YOUR BIN/BOX.
spkd
 SELECT BY NUMBER

     1. PARAMETER# ORDER.  COMPLETE FILE WILL BE PRINTED.
     2. NAME ORDER.  COMPLETE FILE WILL BE PRINTED.
     3. CASN# ORDER.  COMPLETE FILE WILL BE PRINTED.
     4. GROUP ORDER.  COMPLETE FILE WILL BE PRINTED.
     5. GROUP & SAMPLE MEDIA SELECTION.
     6. NUMBER OBSERVATIONS FOR REGION.
     7. ENTRY DATE 'YYMM' REPORT IN PARAMETER# ORDER.
     8. CHEMFATE REPORT IN PARAMETER ORDER.
     9. RCRA REPORT IN CAS# ORDER.
     A. ICAT REPORT
     B. DRINKING WATER CONTAMINANTS REPORT.
     C. RETURN TO MENU.
 SELECT OPTION?  1
 *******************************************************
 SUMMARY OF YOUR REQUEST
 *******************************************************
 1. PRINTED OUTPUT ON LASER PRINTER
 2. YOUR JOB WILL BE ROUTED TO BINBOX: SPKD
 3. SELECTION: PARAMETER# ORDER.  COMPLETE FILE WILL BE PRINTED.
 *******************************************************

 'SUBMIT THIS JOB?  'Y(ES)' OR 'N(O)' .'
yes

 JOB PKD(JOB04349) SUBMITTED
 *******************************************
 *   1) STORET PARAMETER
 *   2) CASN#                                *
 *   3) GROUP/MEDIA                          *
 *   4) BATCH (REPORTS FOR ALL PARAMETERS)*
 *   5) END                                  *
 *******************************************
 OPTION?
5
 'PARM' COMPLETED--(02/28/86)--(13:21:31)--(PKDSDUD)
 READY
```

The first page of the output appears on the next page.

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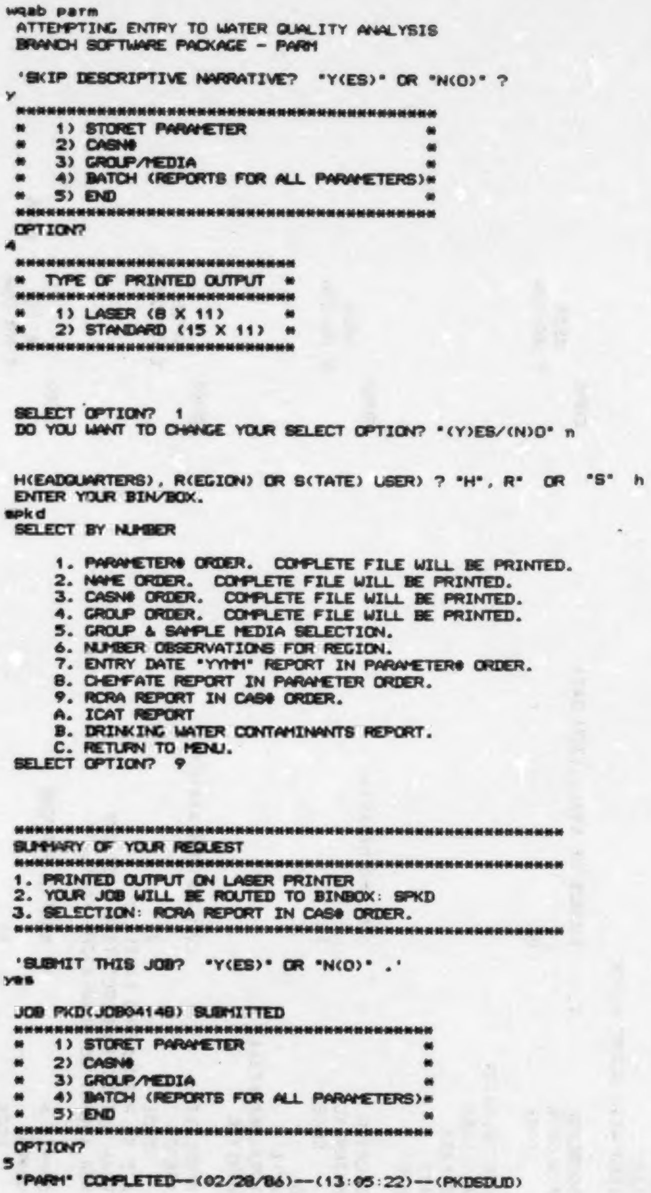
```
                      PARMF     REPORT          02/20/86
                                                                          PAGE     1
     ############################################################
     * RCRA GROUND WATER SUBSTANCES IN STORET -- APPENDIX H *        WQAB,MDSD,OWPS-EPA <<< "PARMFX4" --- DATABASE >>>
=================================================================  EPA-ENVIRONMENTAL ANALYSIS SECTION
FULL NAME
=========================================================================================================================
                                                        PARM#    MEDIUM      CAS NO.        #OBS-GW          TOTAL-SW
=========================================================================================================================
FORMALDEHYDE (MG/L)                                     71880      W          50000          2816              839
METHANAL(FORMALDEHYDE)             WHOLE WATER,UG/L     76995      W          50000
MITOMYCIN C                                TOTWUG/L     73507      W          50077
2H-1,3,2-OXAZPHOS2AMIN,N,N2CLETHTETRHY2-OXTOTWUG/L      73538      W          50180
DDT              IN FISH TISSUE DRY WEIGHT MG/KG        81833      T          50293                             137
DDT IN BOTTOM DEPOS. (UG/KILOGRAM DRY SOLIDS)           39373      S          50293          8693             17559
DDT IN FILT. FRAC. OF WATER SAMPLE (UG/L)               39371      W          50293           410               744
DDT IN SEDIMENT,ORGANIC MATTER WGT,WET WEIGHTMG/KG      81800      S          50293            17                19
DDT IN SEDIMENT,TOTAL WEIGHT,WET WEIGHT MG/KG           81801      S          50293            17                23
DDT IN SHELLFISH OR ANIMAL (UG/KG WET WEIGHT)           39374      T          50293            80               705
DDT IN SUSP. FRAC. OF WATER SAMPLE (UG/L)               39372      W          50293           257               437
DDT IN WHOLE WATER SAMPLE (UG/L)                        39370      W          50293         28671             40908
DDT SUM ANALOGS IN AQ ORGANISMS WT WGT (UG/G)           39375      T          50293           146               146
DDT SUM ANALOGS IN SEDIMENT UG/KG DRY WEIGHT            39359      S          50293           167              1094
DDT SUM ANALOGS INTISSUE WET WGT BASIS                  39376      T          50293          5072             10671
DDT SUM OF ANALOGS IN TISSUE,FAT BASIS(UG/G)            39378      T          50293          1831              1831
DDT TOTAL IN AQUATIC ORGANISMS WT WGT (UG/G)            39358      T          50293                             754
DDT TOTAL IN TISSUE WET WGT BASIS (UG/G)                39290      T          50293           796              1510
DDT TOTAL IN TISSUE, FAT BASIS (UG/G)                   39377      T          50293          2604              2748
P P DDT IN AQUATIC ORGANISMS WET WEIGHT BASIS(UG/G      39304      T          50293           148               146
P P DDT IN TISSUE WET WGT (UG/G)                        39302      T          50293         12513             14646
P P DDT IN TISSUE, FAT BASIS (UG/G)                     39303      T          50293          1821              2001
P,P' DDT IN BOTTOM DEPOSITS (UG/KG DRY SOLIDS)          39301      S          50293          1620              5554
P,P' DDT IN FISH OR ANIMAL BY WET WEIGHT UG/KG          39317      T          50293                             124
P,P' DDT IN WHOLE WATER SAMPLE (UG/L)                   39300      W          50293          8162              8745
P,P'- DDT IN WASTE                            MG/KG     79681      O          50293
P,P'-DDT                                   DISSUG/L     34655      W          50293
P,P'-DDT                                   SUSPUG/L     34656      W          50293
P,P'-DDT      IN SHELLFISH TISSUE WET WEIGHT UG/KG      81862      T          50293             7                 7
P,P'-DDT IN SHELLFISH TISSUE DRY WEIGHT UG/KG           81715      T          50293                             383
P,P'DDT    SLUDGE LIQUID FRACTION UG/L                  61475      E          50293          1270              6621
P,P'DDT    SLUDGE SOLID  FRACTION UG/KG                 61476      E          50293
P,P'DDT    SLUDGE TOTAL  FRACTION UG/L                  61477      E          50293
PP'-DDT IN ADIPOSE TISSUE(MG/KG)                        45555      T          50293
PPDDT IN AIR    NG/CU METER                             85220      A          50293           244               244
PPDDT IN EGGS   WT WGT BASIS    UG/G                    85213      F          50293            27                27
PPDDT IN PLANT  TISSUE WT WGT   BASIS  UG/G             85227      T          50293           352               352
BENZO-A-PYRENE                             DISSUG/L     34248      W          50328            59                60
BENZO-A-PYRENE                             SUSPUG/L     34249      W          50328
BENZO-A-PYRENE                             TOTWUG/L     34247      W          50328          2125              2076
BENZO-A-PYRENE                       DRY WGTBOTUG/KG    34250      S          50328           763               914
BENZO-A-PYRENE                       WET WGTTISMG/KG    34251      T          50328           283               605
3,4-BENZOPYRENE IN WASTE                      MG/KG     79532      O          50328
YHMBN16CARB,11,17,DIMTH18-3,4,5-TRI-MTHESTTOTWUG/L      73639      W          50555
2,4-DINITROPHENOL                          DISSUG/L     34617      W          51285
2,4-DINITROPHENOL                          SUSPUG/L     34618      W          51285
2,4-DINITROPHENOL                          TOTWUG/L     34616      W          51285          1931              2069
2,4-DINITROPHENOL                    DRY WGTBOTUG/KG    34619      S          51285           585               604
2,4-DINITROPHENOL                    WET WGTTISMG/KG    34620      T          51285           290               616
2,4-DINITROPHENOL IN WASTE                    MG/KG     79523      O          51285
1,2-BENZEDIOL4-[1-HYDROXY-2-(MTHAMNO)ETHL]TOTWUG/L      73555      W          51434
```

APPENDIX H (con't)

Should a user want a RCRA report listed in CAS number order they would make a retrieval request choosing option 9. An example is given below with one example page of the output appearing on the next page.



```
wqab parm
 ATTEMPTING ENTRY TO WATER QUALITY ANALYSIS
 BRANCH SOFTWARE PACKAGE - PARM

 'SKIP DESCRIPTIVE NARRATIVE?  "Y(ES)" OR "N(O)" ?
y
 *******************************************
 *   1) STORET PARAMETER                   *
 *   2) CASN#                              *
 *   3) GROUP/MEDIA                        *
 *   4) BATCH (REPORTS FOR ALL PARAMETERS)*
 *   5) END                                *
 *******************************************
 OPTION?
4
 ****************************
 *  TYPE OF PRINTED OUTPUT  *
 ****************************
 *   1) LASER (8 X 11)      *
 *   2) STANDARD (15 X 11)  *
 ****************************



 SELECT OPTION?  1
 DO YOU WANT TO CHANGE YOUR SELECT OPTION? "(Y)ES/(N)O" n


 H(EADQUARTERS), R(EGION) OR S(TATE) USER) ? "H", R"  OR  "S"  h
 ENTER YOUR BIN/BOX.
spkd
 SELECT BY NUMBER

     1. PARAMETER# ORDER.  COMPLETE FILE WILL BE PRINTED.
     2. NAME ORDER.  COMPLETE FILE WILL BE PRINTED.
     3. CASN# ORDER.  COMPLETE FILE WILL BE PRINTED.
     4. GROUP ORDER.  COMPLETE FILE WILL BE PRINTED.
     5. GROUP & SAMPLE MEDIA SELECTION.
     6. NUMBER OBSERVATIONS FOR REGION.
     7. ENTRY DATE "YYMM" REPORT IN PARAMETER# ORDER.
     8. CHEMFATE REPORT IN PARAMETER ORDER.
     9. RCRA REPORT IN CAS# ORDER.
     A. ICAT REPORT
     B. DRINKING WATER CONTAMINANTS REPORT.
     C. RETURN TO MENU.
 SELECT OPTION?  9



 ******************************************************
 SUMMARY OF YOUR REQUEST
 ******************************************************
 1. PRINTED OUTPUT ON LASER PRINTER
 2. YOUR JOB WILL BE ROUTED TO BINBOX: SPKD
 3. SELECTION: RCRA REPORT IN CAS# ORDER.
 ******************************************************

 'SUBMIT THIS JOB?  "Y(ES)" OR "N(O)" .'
yes

 JOB PKD(JOB04148) SUBMITTED
 *******************************************
 *   1) STORET PARAMETER                   *
 *   2) CASN#                              *
 *   3) GROUP/MEDIA                        *
 *   4) BATCH (REPORTS FOR ALL PARAMETERS)*
 *   5) END                                *
 *******************************************
 OPTION?
5
 "PARM" COMPLETED--(02/28/86)--(13:05:22)--(PKDSDUD)
```

```
                                PARMF     REPORT            01/15/86                                     PAGE   755
 EPA/STORET SYSTEM  << PARAMETER NUMBER ORDER -- I.H.S. DATA FILE >>

 CODE    COMPUTER      DECIMAL  PARAMETER DESCRIPTION
          PRINTOUT      POINT                                                    PARAMETER CHANGES    NUMBER  %1970-1975
        ABBREVIATION  LOCATION  MAJOR GROUP                         CAS NUMBER   ENTERED   REVISED    STORET  %1965-1969
=====================================================================================================================
         DEVELOPM                                                                REQUESTOR ACTION     OBSERV  %BEFORE 65
            CODE                 13                                              8505      8508
AIRFT=AIR LIFT                                                                 E HQ-OSW
BAILD=BAILED
COMPR=BLOWN OR SURGED WITH COMPRESSED AIR
WJTTD=WASHED OR JETTED
NONE=NONE
PUMPD=PUMPED
OTHER=OTHER
SRGBL=SURGED WITH SURGE BLOCK

84119    SOURCEOF          1      SOURCE OF EVACUATION DATA                     CODE
         EVACDATA
            CODE                 01                                                 8505
EPA=EPA                                                                           E HQ-OSW
OWNOP=OWNER/OPERATOR
CL=CONTRACT LABS
ESDLB=ESD LABS
STATE=STATE
OTHER=OTHER

84120    PACKING           1      PACKING MATERIAL
         MATERIAL                                                               CODE
            CODE                 13                                                 8505
SAND=SAND                                                                         E HQ-OSW
GRAVL=GRAVEL
NBKFL=NATURAL BACKFILL
SYNTH=SYNTHETIC

84121    REGULATE          1      REGULATING AGENCY
         AGENCY                                                                 CODE
            CODE                 01                                                 8505
STATE=STATE IS REGULATING FACILITY                                                E HQ-OSW
FEDL=FEDERAL AGENCY IS REGULATING FACILITY
OTHER=OTHER AGENCY IS REGULATING FACILITY

84122    SAMPLE P          1      SAMPLE PURPOSE
         URPOSE                                                                 CODE
            CODE                 01                                                 8505      8508
BKGRD=SAMPLED TO DETERMINE BACKGROUND LEVELS                                      E HQ-OSW
GWQAL=SAMPLED TO DETERMINE GROUND-WATER QUALITY
DWQAL=SAMPLED TO DETERMINE GROUND-WATER SUITABILITY AS DRINKING WATER SOURCE
CNTMN=SAMPLED TO DETERMINE GROUND-WATER CONTAMINATION
ASMNT=SAMPLED AS PART OF FACILITY'S ASSESSMENT PLAN
PRMIT=SAMPLED AS PART OF FACILITY'S PERMIT REQUIREMENTS

84124    METHODOF          1      METHOD OF EVACUTAION
         EVACUATE                                                               CODE
            CODE                 13                                                 8505
APUM=AIR LIFT PUMP                                                                E HQ-OSW
BAIL=BAILED
```

APPENDIX I

Geologic Age Identification, Aquifer Names and Codes

APPENDIX I

This Appendix contains the Geologic Age Identification, Aquifer Names and Codes by State. Due to the volume of Appendix I, only the first page is enclosed to illustrate the information contained in the Appendix.

If you intend to include this information in your data base, please contact the Office of Ground-Water Protection for the information on your State.

APPENDIX I

GEOLOGIC AGE IDENTIFICATION, AQUIFER NAMES AND CODES

	CODE
Unknown Age	000
Cenozoic	100
Quaternary	110
Holocene	111
Pleistocene	112
Tertiary	120
Pliocene	121
Miocene	122
Oligocene	123
Eocene	124
Paleocene	125
Mesozoic	200
Cretaceous	210
Upper	211
Gulfian	212
Lower	217
Comanchean	218
Coahuilan	219
Jurassic	220
Upper	221
Middle	224
Lower	227
Triassic	230
Upper	231
Middle	234
Lower	237
Paleozoic	300
Permian	310
Upper	311
Ochoan	312
Guadalupian	313
Lower	317
Leonardian	318
Wolfcampian	319
Pennsylvanian	320
Upper	321
Virgilian	322
Missourian	323
Middle	324
Des Moinesian	325
Atokan	326
Lower	327
Morrowan	328
Mississippian	330
Upper	331
Chesterian	332
Meramecian	333
Lower	337
Osagean	338
Kinderhookian	339
Devonian	340
Upper	341
Middle	344
Lower	347
Silurian	350
Upper	351
Cayugan	352
Middle	354
Niagaran	355
Lower	357
Alexandrian	358
Ordovician	360
Upper	361
Cincinnatian	362
Middle	364
Champlainian	365
Lower	367
Canadian	368
Cambrian	370
Upper	371
St. Croixan	372
Middle	374
Lower	377
Precambrian	400
Precambrian Z	410
Precambrian Y	420
Precambrian X	430
Precambrian W	440

TABLE 1. NUMERIC CODES FOR GEOLOGIC AGE IDENTIFICATION

CATALOG OF AQUIFER NAMES AND GEOLOGIC UNIT CODES

BY STATES AND OTHER AREAS

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ALABAMA

CENOZOIC

CENOZOIC ERATHEM	100CNZC

QUATERNARY

QUATERNARY SYSTEM	110QRNR
QUATERNARY-TERTIARY SYSTEMS	110QRRT

HOLOCENE

ALLUVIUM	111ALVM
COASTAL DEPOSITS	111CSTL
HOLOCENE-PLEISTOCENE SERIES	111HCPC
HOLOCENE SERIES	111HLCN
LOW TERRACE DEPOSITS,ALLUVIUM	111LTAV
REGOLITH	111RGLT
RESIDUUM-NORTH ALABAMA	111RSDM
SAPROLITE	111SPRL

PLEISTOCENE

HIGH TERRACE DEPOSITS	112HGTC
INTERMEDIATE TERRACE DEPOSITS	112IMTC
LOW TERRACE DEPOSITS	112LTRC
PLEISTOCENE SERIES	112PLSC
TERRACE DEPOSITS	112TRRC

TERTIARY

TERTIARY-CRETACEOUS SYSTEMS	120TRCC
TERTIARY SYSTEM	120TRTR

PLIOCENE

CITRONELLE FORMATION	121CRNL
PLIOCENE SERIES	121PLCN

MIOCENE

CATAHOULA SANDSTONE	122CTHL
MIOCENE-EOCENE SERIES	122MCEC
MIOCENE SERIES	122MOCN
PAYNES HAMMOCK SAND	122PHMK
RESIDUUM-SOUTH ALABAMA	122RSDM

OLIGOCENE

BUCATUNNA CLAY MEMBER OF BYRAM FORMATION	123BCTN
BYRAM FORMATION	123BYRM
CHICKASAWHAY LIMESTONE	123CCKS
FOREST HILL SAND	123FRHL
GLENDON LIMESTONE MEMBER OF BYRAM FORMATION	123GLND
MARIANNA LIMESTONE	123MRNN

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